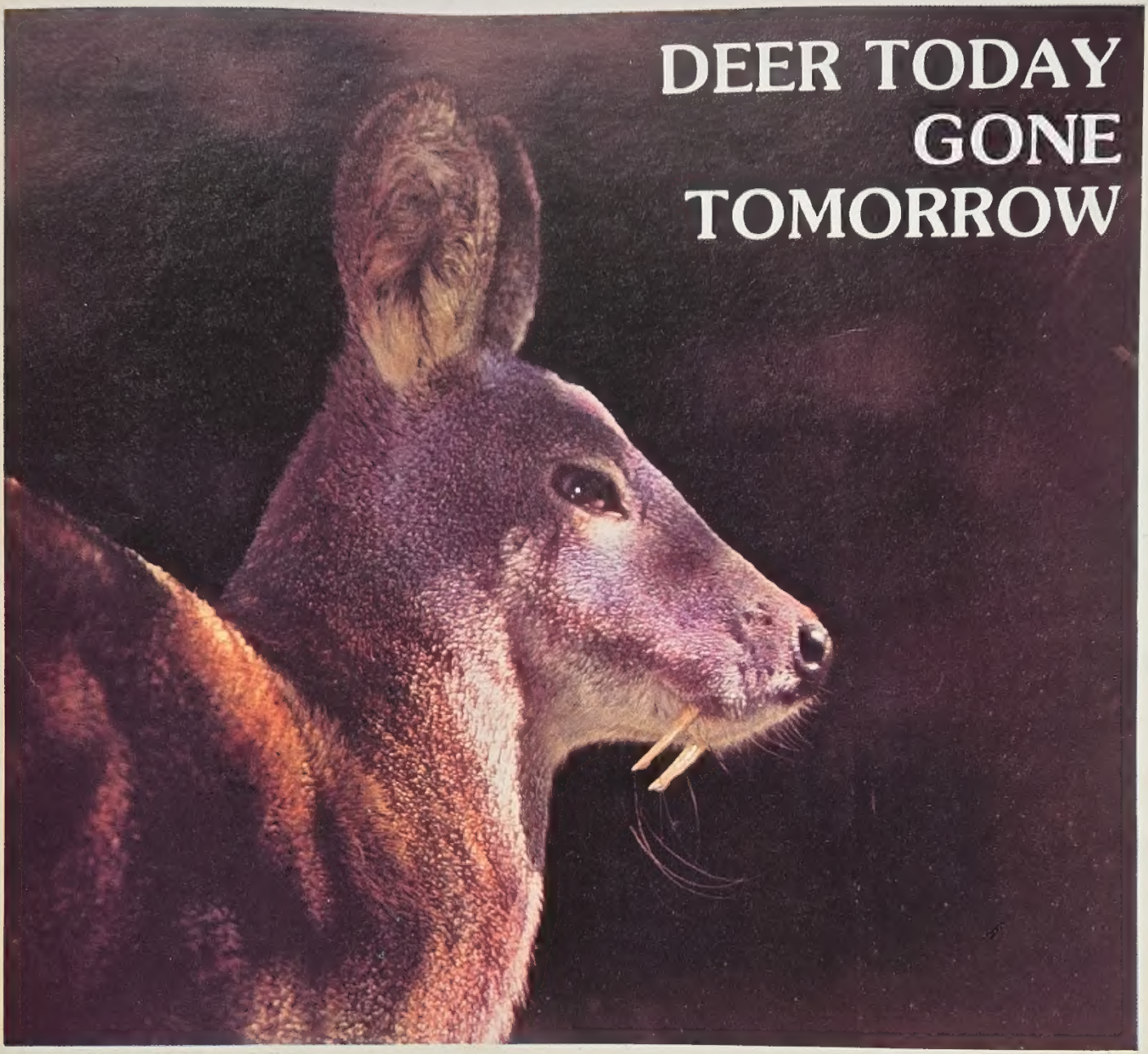
July, 1981 Rs. 5

INDIAN Wildlifer



MUSK DEER (Maschus moshiferus)'.
Dachigam National Park, Kashmir, India

The Musk Deer, like scores of other species, faces extinction. Tomorrow's eyes may never rest on their unique synthesis of natural beauty. Yet no one seems to care.

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For more information, contact:
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Wildlifer at large

Most of us who profess to be concerned about the future seem unclear whether the quicksand of man's technological ambitions will permit civilisation to survive past the year 2000.

What is clear however is that the intelligence and farsightedness of man is not to be easily relied on. The same 'good man' whose love for his family and fellow friends provides example for emulation—the same man who you find in the quiet hours of the evening taking his much cossetted dogs for a run in the neighbourhood, is capable the following morning of coldbloodedly approving plans for a chemical plant without regard for any ecological consequences that such a decision might have in the region where it is planned. Without blinking an eyelid, in the name of development and profit he will clear land and begin construction destroying flora and fauna which are crucial to ecology of the area. If pollutants are dumped into the nearby river, killing precious aqualife and more significantly exposing the millions of users of that river to serious toxic effects—well that's progress.

Or is it? In twenty or even fifty years time, the imperatives of today will seem not only irrelevant and reckless, but also will have impaired the quality of life for all future generations. Twenty or fifty years from now the headlines of today will mean nothing to children of that time. But if a tiger was to walk out of the woods and roar, it will quicken their pulses and cause their hearts to beat faster, whether they are white or black, rich or poor, speak hindi or english. The miracles of industrialisation can never match the awe of a flight of slow gliding Painted Storks, perfect in their flight, timeless in their beauty, ever true to the primal fact that only nature is eternal.

The story is told of the foreigner who stepped out of Santa Cruz airport and told the taxi driver to take him to the nearest peacock. Funny as that story might seem, tourists come to India not merely to see the country's monuments or flyovers. They come to lose themselves in the lure of the jungle and to see the cobra the elephant, the tiger, and a host of other animals roaming free and wild. If India's wildlife becomes as scarce as those in countries from which these tourists come there will be no reason for them to traverse the oceans and skies, They have zoos in their cities just as we do. People believe that India is an animal paradise, the only country in Asia where the rest of creation is still on some kind of equal footing with mankind. That belief should not be permitted to become history.

Salman Khurshid

Trustee

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For all advertisement and circulation queries contact: Indian Wildlifer, A-007, Pragati Vihar, New Delhi-110 003

Published by Sadhna Gupta for Indian Wildlifer Trust and printed by her at Ambassador Press, C-56/1, Okhla Industrial Area Phase II New Delhi-110020 Tel: 636038

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INDIAN
Wildlifer

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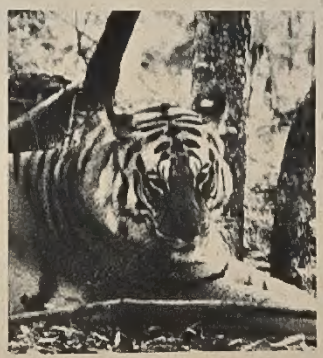

In the forest of the night—at Bandavgarh Park rich in history and wildlife, and ofcourse tigers.

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COVER: Rajesh Bedi photographed these cheetal *axis axis* (front) just as their horns were coming into velvet. He used a Nikon FM camera, 800 mm Vivitar lens and Kodachrome 25 film. Against the backdrop of the Old Fort, Rajesh Bedi photographed this painted stork (back) nesting at the Delhi Zoo. He used a Nikon FM camera, 400 mm Novaflex lens and Kodachrome 25 film.

Saving The GHARIAL

TEXT: DHRUVA BASU PHOTOGRAPHS: RAJESH BEDI

The author and his colleagues ventured into the dreaded Chambal ravines to save the last surviving member of an entire family of crocodilians from extinction.

The Chambal river and its surrounding areas is notorious for bandits and we would have preferred to be far away. But it was all for a good cause. We were searching for gharial eggs which we hoped to hatch under protected conditions. Later, when they were less prone to danger from other predators, we would release them back into the river in a bid to stem the tide that was carrying them to extinction.

From his fort at the confluence of the Chambal and Jamuna rivers, the Raja of Bhareh had said: "If gharials are to be found anywhere, the Chambal is the place". He was in a position to know, and he was right.

All that was five years earlier. Today, a small culmination of our efforts was to occur. We had made a long and dusty journey by truck and with us were 45 young gharials taken from the rearing ponds of the Gharial Rehabilitation Centre at Kukrail, near Lucknow, all of whom were suffering from the effects of the journey. Even after alighting it was difficult to convince the exhausted and dehydrated creatures to leave the captive security of their boxes for the cool waters of the Chambal. Finally, however, they began going in. Swimming slowly, the streamlined shapes disappeared into the depths, and with their release the restocking programme of the National Chambal Gharial Sanctuary was underway.

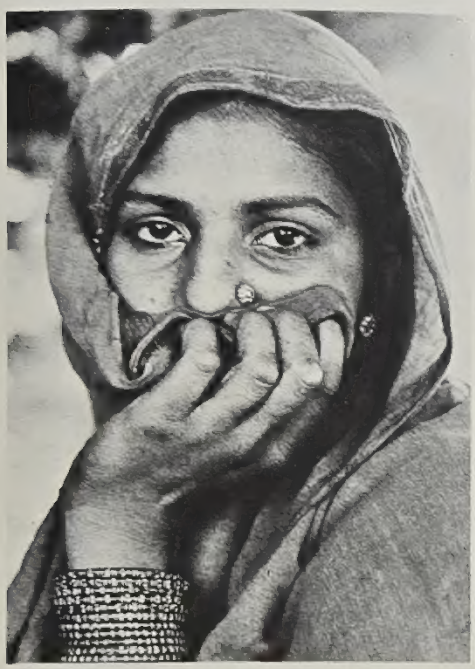
Earlier, in 1975, conditions had not warranted much hope. We had spent a cold winter on a fishing boat on the Chambal checking the Raja's tip. All that we saw was the carcass of a ghar-

Hatching in the wild: the first photographic documentation of this event.

ial that had been left by poachers. It had been stripped of its prized belly skin and *ghara*, the unique pot-shaped appendage on its snout, from which the gharial takes its name.

On our boat was Sobaran, a fisherman who had spent his life on the river. He collected his memories and told us about a time two decades earlier when fleets of dinghies had combed the Chambal for ghavial. "Sometimes more than ten large ones would be snared with nets and hooks, and I would enjoy a slice of gharial tail roasted over a fire".

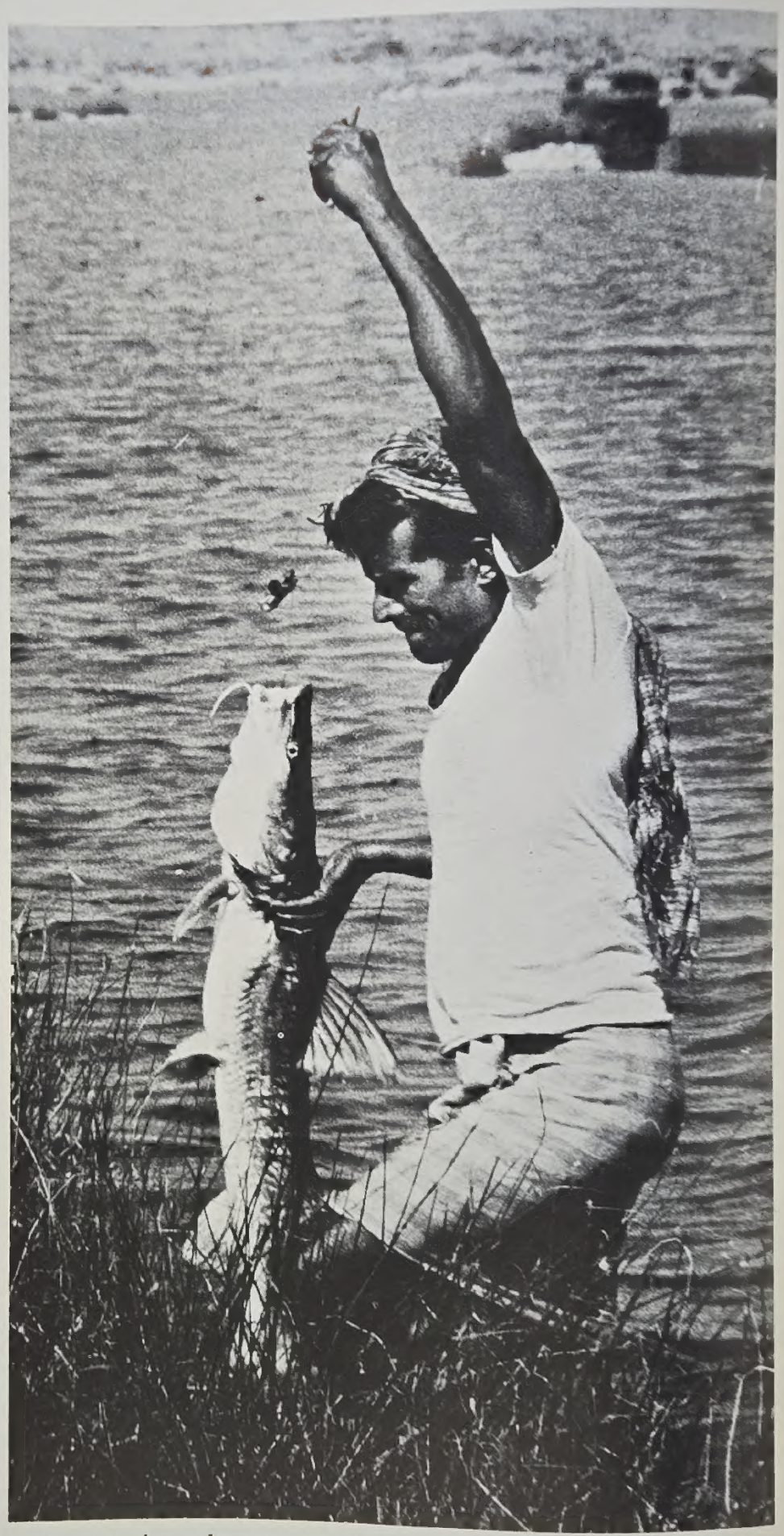
Later, when we asked him if he knew of any authentic case of anyone being eaten by a gharial, he replied: "Oh, yes. I was young then. It was



A young lady from the village of Bharra.

dusk on the banks of the Brahmaputra, and a boy of my age had gone fishing for prawns. A sudden scream took us to the spot, and there we saw that an old male gharial had seized the boy by the buttocks and had dragged him out to mid-stream" Sobaran could not quite understand why we were helping this potentially dangerous animal to survive, but he was finally convinced that a rare tragedy like the one he recounted was no reason to allow the complete disappearance of a life-form.

What is so special about this animal that made us devote so much time and



Ramjee, the co-boatman catches dinner for his expedition mates.

effort in its behalf? The gharial is a living fossil, the sole surviving member of a family of crocodilians that ranged all over the earth in the dinosaur dominated mesozoic era. Its fossils today dot locations as diverse as South America and Asia. Within the order Archosauria which contains the dinosaurs, the sub-order crocodilia is represented by twenty living species of alligators and crocodiles, with the single specie of gharial that is unique to India.

Among these crocodilians, the sexually dimorphistic gharial possesses a significant difference; a bony protrusion emerges on the snout tip of the male when it reaches sexual maturity, and continues to grow throughout its life. This appendage was a subject of controversy among zoologists as late as the 'sixties', when its existence was even denied in a well-known book on crocodiles.

As for its function, it has been said it is a sort of air chamber that enables the gharial to prolong its submersion, but in all probability it is a secondary sexual characteristic. It could also have been some thing necessary to deal with the environment of an earlier time which nature neglected to eliminate, for now it is a hindrance—when the snout is slashed in the water to catch fish.

In the first decade of this century mention was made of the 'teeming' numbers of crocodiles in the rivers of India, but no-where now is the situation so happy. Although gharials lay a large number of eggs, the majority of the hatchlings fall prey to large fish, turtles, adult crocodiles, jackals and birds. The survival rate of all crocodilians in the wild has been estimated at an incredibly low 0.10 per cent. What was needed was a programme to breed a large number of gharial in a short time.

We knew from the spoor we saw, that somewhere along the river gharials were breeding, and we were determined to find them. So, in the month of March following our winter survey, we left Dholpur Ghat on the Chambal in a new boat along the length of the river bordering Madhya Pradesh and Rajasthan. Unable to traverse the rapids upstream, we headed down to an area of deep water known as *Magra Deh*, or crocodile pool.

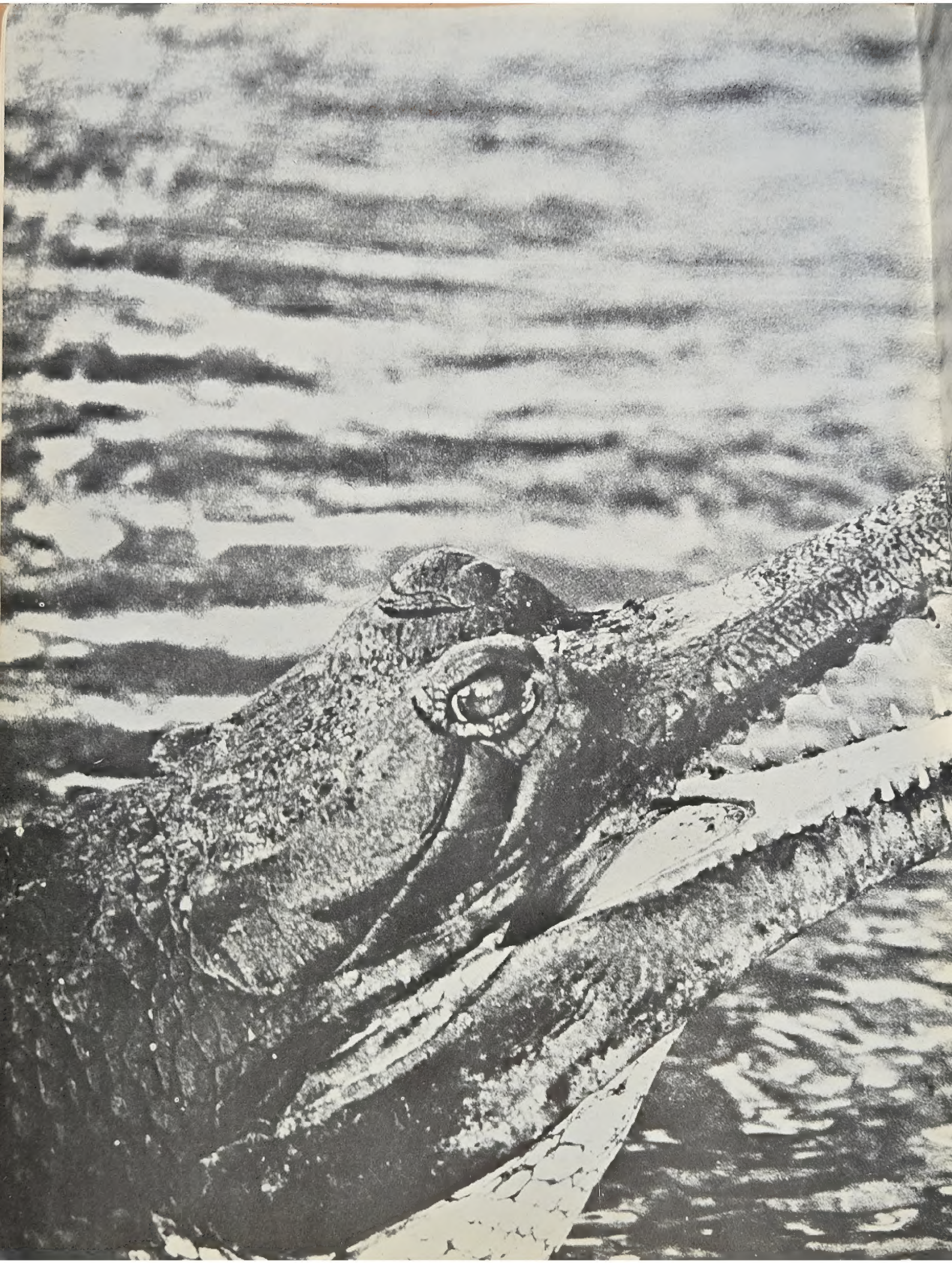
It is in these deep pools of almost still water that the gharial finds its ideal current-free habitat. In the late evening light we strained our eyes, when a sudden movement gave the animal away; a female gharial about eleven feet long.

The steep sandbank that revived the hopes of the expedition and proved that gharials were still hatching in the wild.

We had seen our first adult gharial and our hopes were raised. But our excitement knew no bounds the next day when we realised that the spot was a perfect sandbank for nesting. It rose steeply from the water in dune-like fashion, and the gharial could lay its eggs there without travelling far; nor would the eggs be drowned if the river rose. The gharial too must have thought the spot ideal, for it was full of trial nesting hole which the female digs prior to depositing its eggs. These could be decoys for egg predators, but more probably they are manifestations of the nesting urges of gharial females; practice sessions before the real event.

This period of trial nesting went on for a month. We would often see the females then, but only rarely catch glimpses of the males as they surfaced for air. The females only reach fifteen feet in length, but the males occassionally go over twenty. The two that reigned over this particular area could be told apart by the distinctive shapes of their *gharas*.

After ten o'clock in the morning, the animals generally kept out of sight, at which time I would fish. The river teemed with tengra (mystus) Occasionally gooch (Bagaritus), Wallago or Mahaseer (Barbus) would



attach themselves to my line.

I had my brush with dacoits (bandits) too, though they were relatively quiet that summer. The Chambal ravines are a maze of mounds and gulleys, and besides the occasional herds of deer and antelope, the wilder variety of human also finds this a fine abode. My encounter was with the dreaded dacoit queen Phoolan Devi's gang. Though relieved of my binoculars, they were otherwise courteous, even giving me a stamped receipt to prove the authenticity of the robbery!

By this time, it was April, and we were beginning to wonder when, if at all, the eggs would be laid. The tracks on the banks diminished. But one day we were startled to see half-a dozen broken eggshells lying scattered around a half-opened nest. An examination enabled us to reconstruct the drama that had taken place on the spot.

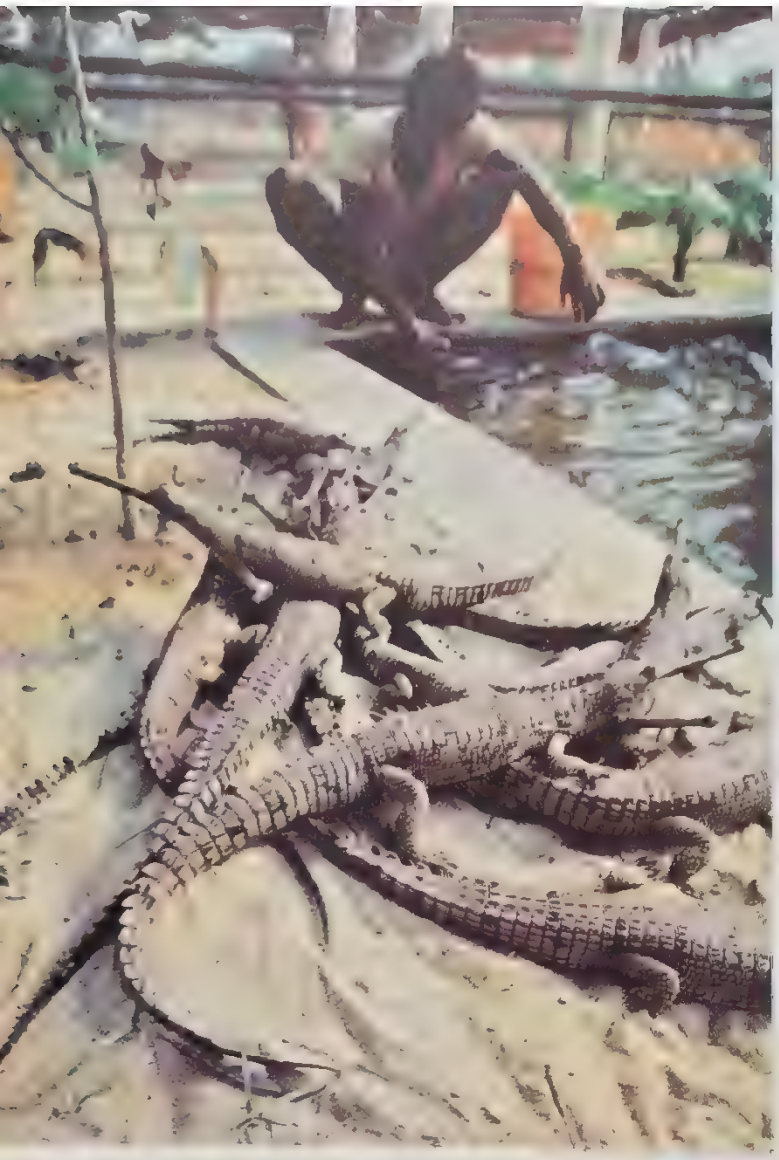
A female had laid her eggs and returned to the water. But the strong scent emanating from the freshly laid eggs had drawn a jackal, who proceeded to dig up the nest and devour some of the eggs. The mother had returned almost immediately, and stood 'guard' over the remainder, but she had returned to the water at dawn without covering the eggs with sand.

This incident galvanised us into action and we began searching for the remaining nests, which could have been anywhere in an area measuring six hundred by one hundred and fifty feet. By ten in the morning we had to stand on towels and bedsheets to prevent our soles from being burned off our feet. By evening we had located four nests. We then proceeded to protect the eggs by pegging down a three feet square piece of wire mesh over them and then re-covering the nests which were about two feet below the surface.

For the next forty-five days we let the eggs remain as they were while incubation proceeded and the embryos developed. The eggs could have been moved, but not between the second and fifteenth day as this is the period when the delicate network of blood vessels forms in the embryo, and any movement then will damage the vessels and abort the process of the formation of a healthy young gharial. Hasty removal of the eggs can therefore be wasteful, but by waiting patiently for the necessary period and only then moving the eggs, we have had a 90 per cent success rate in hatching.

The nests were opened for egg collection in mid May, when each egg was marked with a spot of paint on the topmost point of its elliptical shell. The eggs were hard, white and calciferous. The paint spot was to record the position in which the eggs were found, so that they would not be rotated when moved, for the developing embryo could then have been suffocated under the weight of the yolk or drowned in its own sustenance. To restrict damage to them, the eggs were packed in moist sand.

The expedition boat against the stark Chambal ravines.

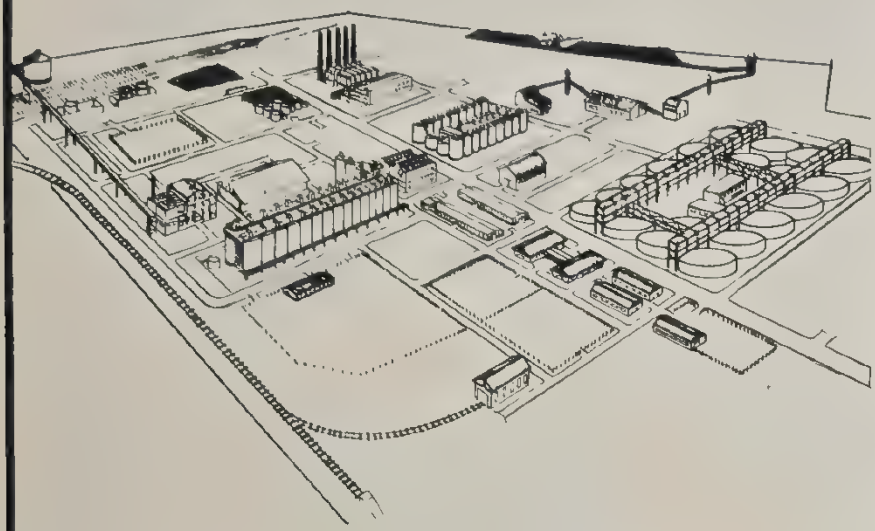


Baby gharials at the Kukrail breeding farm.
Collecting gharial eggs for hatching under protected conditions.
Force-feeding a newly born hatchling at the farm.

While we were packing the eggs the mothers were nervously swimming close to the bank, and I pacified my remorse by making a silent promise to return their off-spring to them when they were large enough to protect themselves. We returned to Kukrail that year with two hundred and forty eggs collected from six nests, and in early June, the eggs began to hatch. In response to the chirpings and grunts that could be heard, we removed the covering sand to expose the eggs. The hatchlings had pierced their shells with the sharp points on the tips of their snouts. This sharp point on the snout of every hatchling is known as the egg tooth. Quickly heads and bodies emerged from the shells and then the shells were discarded altogether.

I have been observing gharials hatching for six years now, and still remain amazed by the phenomenon.

CO-EXISTENCE



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Newfields

An adult Gharial : saved from the threat of extinction by the timely intervention of the author's team.

The hatchlings are about fourteen inches long, developing in a curled fashion in eggs five or six inches in length. This is facilitated by the snout being disproportionately short. Just prior to hatching the sizeable portion of yolk mass remaining is absorbed into the body cavity through the parted ventral skin of the hatchling. This continues to sustain it until its snout reaches proper size and the teeth emerge making it possible to catch fish.

Our success was repeated in the following years. In 1979, the governments of Madhya Pradesh and Rajasthan had chalked out the portions of the river to be used for the sanctuary. Commercial fishing in the river was also banned under the Wildlife Act of 1972. Our work had brought the desired results.

Thanks to this project at least eight species of river turtles, thirteen species of major fish and the Gangetic dolphin, all of which also inhabit the Chambal, are safe.

Compared to the once ragged remnant of twenty-five nesting families of gharial that were doomed, there are now four hundred gharials in the Chambal river, and with time their numbers will increase to even sustain a skin industry. Equally important in the long run, displaced fishermen have been encouraged to form a co-operative to benefit from the revenue soon to be engendered by the Chambal refuge. □

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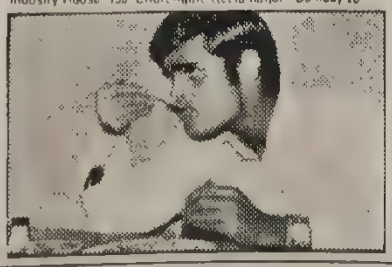

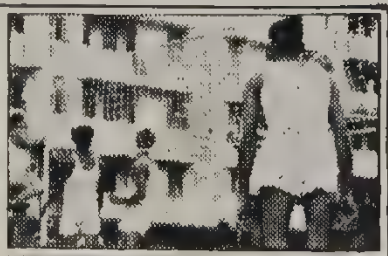

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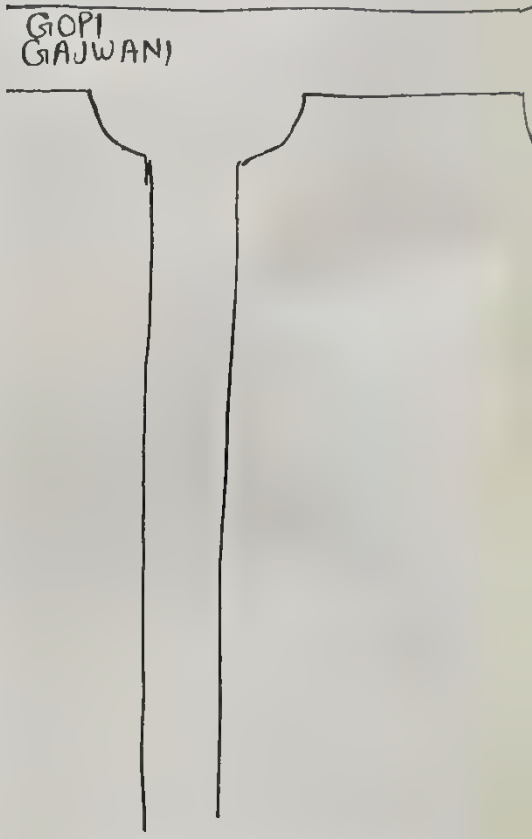
In Praise Of The Indian CROW

I suppose he is the hardest lot that wears feathers. Yes, and the cheerfulest, and the best satisfied with himself. He never arrived at what he is by any careless process, or any sudden one; he is a work of art, and "art is long"; he is the product of immemorial ages, and of deep calculation; one can't make a bird like that in a day. He has been re-incarnated more times than Shiva; and he has kept a sample of each incarnation, and fused it into his constitution. In the course of his evolutionary promotions, his sublime march toward ultimate perfection, he has been a gambler, a low comedian, a dissolute priest, a fussy woman, a blackguard, a scoffer, a liar, a thief, a spy, an informer, a trading politician, a swindler, a professional hypocrite, a patriot for cash, a reformer, a lecturer, a lawyer, a conspirator, a rebel, a royalist, a democrat, a practicer and propagator of irreverence, a meddler, and intruder, a busybody, an infidel, and a wallower in sin for the mere love of it. The strange result, the incredible result, of this patient accumulation of all damnable traits is, that he does not know what care is, he does not know what sorrow is, he does not what remorse is, his life is one long thundering ecstasy of happiness, and he will go to his death untroubled, knowing that he will soon turn up again as an author or something, and be even more intolerably capable and comfortable than ever he was before.

In his straddling wide forward-step, and his springy sidewise series of hops, and his impudent air, and his cunning way of canting his head to one side upon occasion, he reminds one of the American blackbird. But the sharp resemblances stop there. He is much bigger than the blackbird; and he lacks the blackbird's trim and slender and beautiful build and shapely beak; and of course his sober garb of gray and rusty black is a poor and humble thing compared with the splendid lustre of the blackbird's metallic sables and shifting and flashing bronze glories. The blackbird is a perfect gentleman, in deportment and attire, and is not noisy, I believe, except when holding religious services and political conventions in a tree; but this Indian sham Quaker is just a rowdy, and is always noisy when awake—always chaffing, scolding, scoffing, laughing, ripping, and cursing, and carrying on about something or other. I never saw such a bird for delivering opinions. Nothing escapes him; he notices everything that happens, and brings out his opinion about it, paticularly if it is a matter that is none of his business. And it is never a mild opinion, but always violent—violent and profane—the presence of ladies does not affect him. His opinions are not the outcome of reflection, for he never thinks about anything, but heaves out the opinion that is on top in his mind, and which is often an opinion about some quite different thing and does not fit the case. But that is his way; his main idea is to get out an opinion, and if he stopped to think he would lose chances."



I suppose he has no enemies among men. The whites and Mohammedans never seemed to molest him; and the Hindoos, because of their religion, never take the life of any creature, but spare even the snakes and tigers and fleas and rats. If I sat on one end of the balcony, the crows would gather on the railing at the other end and talk about me; and edge closer, little by little, till I could almost reach them; and they would sit there, in the most

unabashed way, and talk about my clothes, and my hair, and my complexion, and probable character and vocation and politics, and how I came to be in India, and what I had been doing, and how many days I had got for it, and how I had happened to go unhanged so long, and when would it probably come off, and might there be more of my sort where I came from, and when would they be hanged—and so on, until I could not longer endure the embarassment of it; then I would shoo them away, and they would circle around in the air a little while, laughing and derding and mocking, and presently settle on the rail and do it over again.

They were very sociable when there was anything to eat—oppressively so. With a little encouragement they would come in and light on the table and help me eat my breakfast; and once when I was in the other room and they found themselves alone, they carried off everything they could lift; and they were particular to choose things which they could make no use of after they got them. In India their number is beyond estimate, and their noise is in proportion. I suppose they cost the country more than the government does; yet that is not a light matter. Still, they pay; their company pays; it would sadden the land to take their cheerful voice out of it.

Mark Twain visited India in 1896 and wrote this vignette on the Indian crow in his book 'Following the Equator' published in 1897

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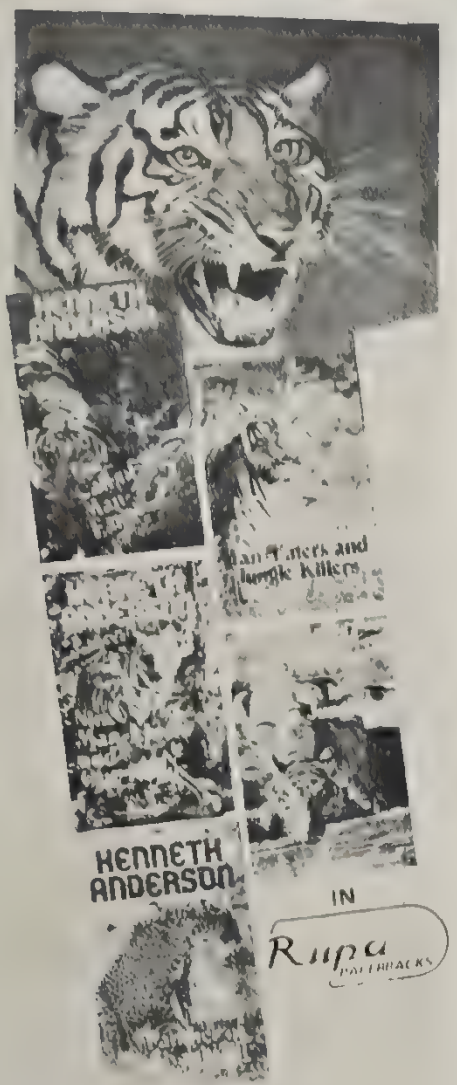

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"Wheat Eaters Ar

Primarily a botanist Prof K.N. Kaul was in-charge of the Indian section at Kew gardens in the United Kingdom. He has done research on medicinal plants, and has set up the department of gardens, parks and floriculture for the government of Jammu & Kashmir. Kaul's reputation as a committed naturalist is well known. At present his efforts are devoted to advising the Uttar Pradesh state government on its World Bank aided social forestry programme.

Wildlife: How can anyone expect wildlife to survive without forests? We seem to be the least bothered about our environment although we consume it. The government is not affected by the destruction of the environment and what we need today are private organisations and societies that will take up the cause. In most countries, people are concerned about the environment they live in.They periodically meet through various organisations to plan for the development of the environment. This concern is lacking amongst Indians.

In India, forests belong to the government but formerly they were the property of Zamindars and princely states. When the government decided to acquire private forests, the owners quickly cut down most of the trees and sold them as timber. So, before the government could take over the private forests, most of them had been already cut bare. The administration was slow in the process of taking over the forests.

Tribes came to India from all over the world and settled down in our country caring for it and making it lush and green. Even during the rule of the Maharajas, our forests were cared for. In Jodhpur, the King would personally go to feed the wild pigs. He also supervised plantations in the desert. Today, we are still following the curse of the British Raj and exploiting our own valuable resources. We are following the traditions of the British without realising that the British had only one intention—exploiting India. In England however, the British are very possessive about their environment and wildlife. There you will never find

e The Criminals"

children killing birds. In India, the Britishers left behind the habit of Shikar, and even now, 50 years later, we continue to exploit our own natural resources. In form we are Indians but in training we just cannot help being British.

Who is to be blamed for driving our rare animals to extinction? We have to organise independent bodies that pressurise the government on important issues related to the environment. It is unfortunate that the intellectuals in this country do not think it important enough to preserve the ecological system. I once asked a professor from Lucknow to take interest in the zoo—but he refused. Mainly because these activities are not recognised by the government. He would rather sit on his desk and write papers to further his job prospects than work in the field. The big industrial houses would prefer to build a temple than fund a botanical garden. We are just not thinking about our future.

If we continue to destroy our environment, we will become refugees by 2,000 A.D. And the people who will be responsible for this disaster will be the wheat-eaters. They are the criminals. Man initially used wheat as gum but later burnt entire forests to cultivate it. Man first burnt Iraq, then Iran and then shifted to India. I am not suggesting that we should stop cultivating wheat, but we should have a substitute.

I feel that environmental education must form a part of every child's curriculum. Unlike an animal, a human child has to be introduced to his natural surroundings and inspired to look after his environment. We must organise bodies that can work with the villagers and tell them the importance of preserving the eco-system. But the movement should not be like Chipko. The Chipko movement is a reaction. The people living in the forests are realising that unless the forests are preserved, the porous top-soil will wash away leading to the scarcity of water. And without water, neither human nor beast can survive. Development is important, but development has to be scientific. The Chipko movement is basically a reaction against the blunderings of the authorities. What we need is a genuine movement, and not a reaction.

PAINTED MIGRANTS IN THE METROPOLIS

BY J.H. DESAI

They first appear as small black dots on the horizon. Riding over the warm air, gliding effortlessly towards their nesting ground; their long yellow bills, orange crowns and black and white body plumage glistening across the August sky. Squadron after squadron, the Painted Storks arrive for yet another breeding season at the Delhi Zoo's bird sanctuary.

Nearing their destination, the Painted Storks descend steeply, their wings cupped at a right angle to their bodies. Just before landing the birds reduce speed with powerful back strokes of the wings. Then legs bent forward and toes splayed to absorb the impact of a touch down, the storks come home to roost on the tree tops.

As the influx reaches its peak during the last week of August, pandemonium prevails at the Painted Stork colony. Wings flap, bills clatter and feathers fly as the male storks hold and fortify the selected nesting sites. These are often old nest sites with the remmants of platforms from the previous season. They spend many hours at the chosen places and assert ownership of their territories. Trespassers are chased away with vicious jabs of the bill. However, at each of these nesting sites females make repeated attempts to establish a rapport with a potential male partner.

They keep edging towards the territory and after elaborate appeasing gestures, one of them ultimately succeeeds in entering the territory of the prospective bridegroom. Finally, a bowing ceremony in which both the storks with their tails pointed to the ground bow their heads repeatedly culminates in an acceptance of each other. Such elaborate courtship rituals forge nuptial bonds between the pairs at each of the nesting sites in the colony.

Soon after this formal union, nest construction is begun in earnest. The nests of the Painted Storks are well constructed platforms of twigs with a shallow depression in the middle. The male stork does most of the twig gathering while the female arranges them in the nest. In about eight days, a nest is complete and ready to receive the eggs though both the partners keep on adding twigs to the nest throughout the entire breeding season.

Watching the nesting activities, I often wondered why the Painted

Perfect landing: the begining of a new breeding season at the Delhi Zoo.

Storks had chosen to nest in the middle of the metropolis. I was also puzzled by their method of catching fish and intrigued by the lack of vocalization in the adult storks. Again I was at a loss to understand what stimulates them to commence the breeding operations during the last phase of the rainy season.

To find answers to these questions, extensive observations of their feeding habits, nesting and behaviour were made during six consecutive breeding seasons. The weights of freshly hatched chicks were recorded, their growth measured, changes in their plumage pattern were studied and efforts made to find out what goes wrong with their sound box.

The story behind the nesting and breeding of these birds—a Zoological, non-fiction mystery drama—began almost sixteen years ago. A group of water birds—Sarus Cranes, Adjutant Storks, Demoiselle Cranes and a variety of ducks—were released in the Zoo ponds with the idea of stocking a display area for Indian wading birds. Known as the "Indian Swamp" this exhibit was designed to provide the visitors an intimate view of the habitat of tropical water birds. A few pinioned Painted Storks were also introduced into this simulated habitat in 1959. In August, 1960, a group of wild Painted Storks arrived from the neighbouring areas and returned after surveying the swamp. During the next few days the number of visiting Painted Storks increased and some of them decided to stay back on the trees in the Zoo ponds. Later, they built nests for the first time in the Zoo. Since then the storks have shown considerable faithfulness to this natal site and have returned to the same site year after year in increasing numbers.

The colony now consists of over a hundred nests of painted storks, and at the peak of the breeding season, the crowns of the trees are so densely crammed that the distance between two nests is usually not more than twenty five centimetres. The birds occupy adjacent nests and tolerate each other till the chicks grow up and the living quarters become crowded, then frequent fights occur between them.

Along with the storks, I have observed five other closely related species—the Cattle Egret, Little Egret, Pond Heron, Little Cormorant and Night Heron—feeding and nesting at this colony in large numbers. Although these species breed at different times of the year, their breeding seasons overlap to some extent. They share the same habitat but have adopted different life-styles and specialized dietary habits. Storks build their nests on the upper most branches of the trees while those of the egrets, herons and cormorants are situated at a lower level on the same tree.

During the last phase of the rainy season the shallow-water areas in the zoo and marshes along the river Jamuna, where the storks feed, are flooded by rains. This causes a wide dispersal of fish in the feeding areas of the storks. Fishes of the required size are in abundance at this time and most of the species of fish found in this region spawn just before or during the monsoon. It is ironical that the breeding season of the Painted Storks is closely related to that of the fishes. A large stork colony requires literally tons of food during one season. This is regulated to the time of an increased food availability from innundation in the feeding areas.

Since the availability of food for the storks depends on the water levels at the feeding grounds, their reproduction is in proportion to the amount of rainfall. In the season following heavy rains, they breed in large numbers and rear a large number of chicks per pair. Scanty rain results in low productivity of eggs and heavy mortality among the chicks due to starvation. In a drought year, Painted Storks are known to skip breeding altogether.

After the conjugal bonds become firmly established between a pair the female lays two to three dull chalky white eggs at intervals of two or more days. The domestic duties are shared by both the parents, one of which always stays at the nest. To incubate the eggs and protect them, an elaborate ceremony takes place. Clattering loudly, the relieving bird arrives at the nest and its mate stands up and reciprocates in a similar manner. Then both the birds alternately bow to each other five or six times before the relieving bird assumes nest duty.

In October, restlessness and tension prevails at the colony as the eggs begin to hatch after an incubation period of thirty days, Chicks emerge one after another, at intervals, in the same order as the eggs were laid. This time lapse in hatching is advantageous because when food is short, one or more of the chicks, especially the late hatchers, are allowed to die of starvation.

A newly hatched Painted Stork is weak and sparsely feathered. It weighs only 56 grams as compared to an adult stork which weighs about three kilograms. The young one shows lack of interest in the food on the first day of its life, but in the following days, its appetite slowly develops. Unlike other birds the storks do not feed their young beak to beak. They bring small fishes in their gullets and regurgitate on the floor of the nest while the chicks retrieve the fishes without any assistance from their parents. A chick consumes about thirty kilograms of fish brought by its parents during the first seventy days of its life! But not all the chicks which hatch in a nest survive till that age.

Although the parent birds make as many as four trips in an hour to feed the younger, they are unable to cope with the demands of a large brood of chicks. The elder chicks gobble up almost all the food while the younger, weaker chicks starve. Undernourished, the young chicks soon lose ground with the passage of time and the parents do not make any special attempts to feed them. On an average a pair raise only one chick. Predation, starvation or an accidental fall from the nest results in about a thirty-six per-cent mortality rate.

Although the adult Painted Storks are mute, a few hours old chick cries with a harsh rasping sound. Within days, its cry becomes louder and reaches peak volume in about two weeks, but the amplitude and shrillness of the voice gradually declines. Till they are one year old, the juveniles continue to voice effortlessly. But by

the time the young storks are eighteen months old, they become totally aphonic and remain so for the rest of their lives

In birds, the main sound-producing apparatus is the syrinx which is different from the human larynx in both structure and location. Situated at the biturcation of the wind pipe it vibrates the air expelled from the lungs. This vibratory movement of the syringeal membrane and the thin tracheal region in front of the syrinx produce, a sound which is loud and shrill in the young chicks, and low and hoarse in the juveniles. As the chicks grow, anatomical changes occur in the syringeal region of the trachea which result in the loss of flexibility, widening of the lumen and changes in the shape of the trachea in the region of the syrinx. Because of this, the air expelled from the lungs escapes without producing any sound. In the adult stork, the air expelled from the lungs produces a hissing noise. However to compensate for the loss of voice, the Painted Storks have evolved a rich behavioural repertoire of postures and displays by which they communicate.

The Painted Stork is gregarious in its feeding habits. Flocks often numbering twenty or more birds forage together. They feed during the day, with their open bills partly immersed in shallow water and, occasionally stir their feet and flick one wing to startle the fish hiding in the subaquatic vegetation. Unlike the herons and egrets who depend on their vision for hunting, Painted stork use their sense of touch. In order to corroborate my observations, I kept a few storks in an aviary and placed some dead fish in front of them in a small trough filled with clean water. Although the fish were clearly visible, the storks resorted to the same groping behaviour.

An average adult Painted Stork eats six hundred grams of fish each day, as

In the first three weeks the baby storks gain 19 times their weight at birth, and with their white fluffy plumage, look like balls of cotton. They pass through a series of plumage changes before attaining adulthood.

calculated from the metabolic rate of its free-flying existence and the caloric value of the food it consumes. Similarly, the young chick, until it is capable of flying, consumes four hundred grams of fish daily. It has been reported that twenty-four tons of fish are consumed by a nesting colony of some 100 nests during the breeding season from September to April. And all this food is obtained from the water channels, swamps and marshes of the zoo and the Jamuna river.

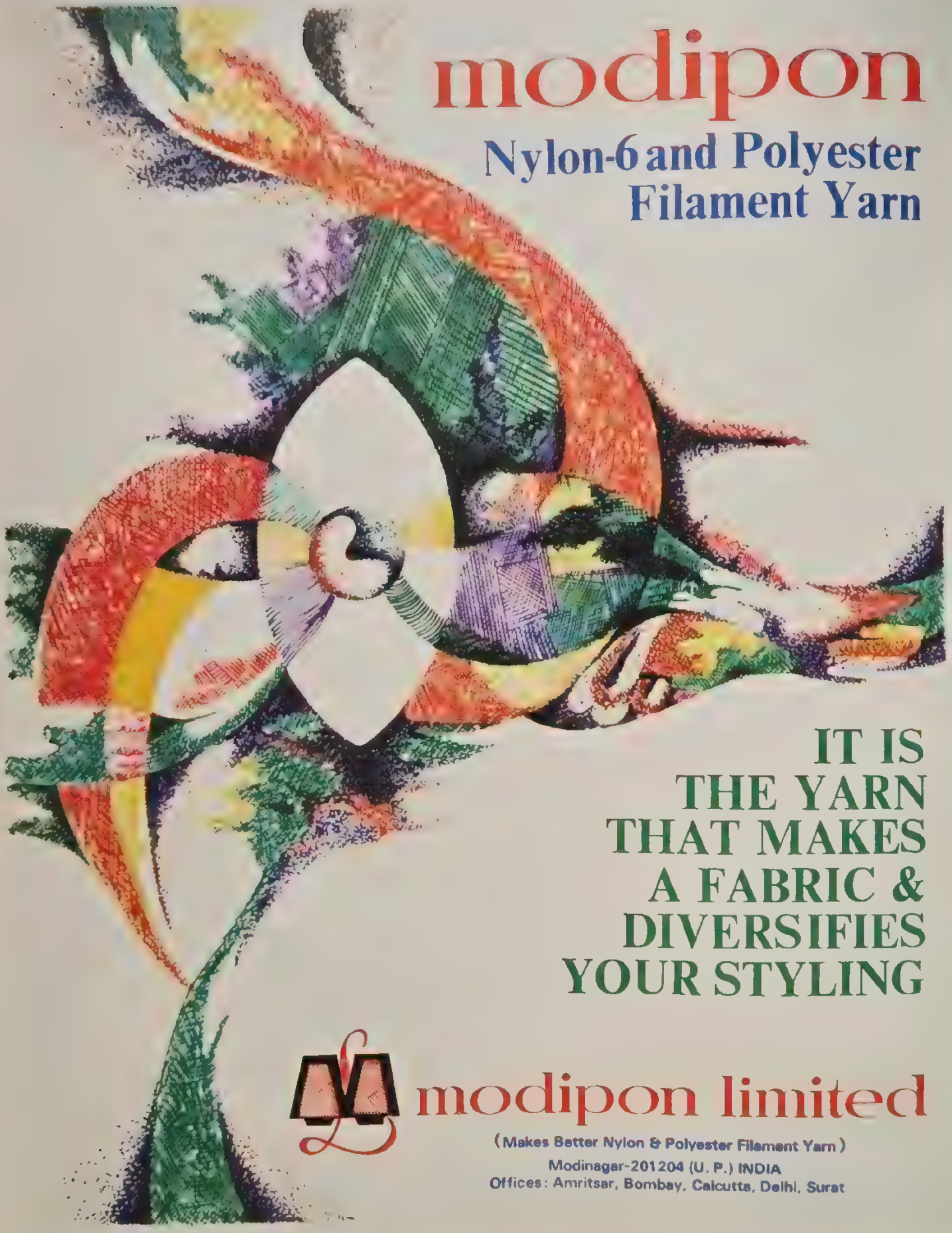
The young storks pass through a series of plumage changes before they attain adult plumage. In the first three weeks, they gain nineteen times their weight at birth, and with their white fluffy plumage, look like balls of cotton. In five weeks, the chicks who are now half the size of their parents begin exercising their wings. When the chick is two months old, it tries to lift itself into the air. The smoky gray bird vigorously flaps its wings but is unable to fly till it is about ten weeks old. Even after the young one is capable of flying, it remains in its nest for several weeks to roost. On an average, they spend one hundred and fifteen days in their nests from the day of hatching till the time they leave the colony. One year old juveniles resemble the adult storks, but lack the rosy pink tail feathers and the black band across the breast.

With the task of breeding over, the colony begins thinning out in April. Departure takes a surprisingly short time, and in a while the storks have gone.

To understand the dispersal pattern of the storks after the end of their nesting season, I have banded some birds but the mystery of their movements and activities away from the colony remains unsolved. Perhaps, one day, we shall know where the Painted Storks spend their summer vacations.

The balding process: a painted stork chick photographed at 20, 35 and 480 days. The chicks are born with a lush growth of hair on the forehead but the balding process starts soon after birth.

PHOTOGRAPHS: RAJESH BEDI



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As the lid opens the bottom of the pitcher is charged with fluid by nectar secreting glands that liberally cover the inner surface. It is this nectar that attracts the insects. The walls of the pitcher are so slippery with the nectar that the insect tumbles down, over the rim. There are some stiff, sharp pointed hair on the rim that thwart the escape attempts of the insects. The exhausted insect falls into the liquid the bottom and is digested by enzymes. The food material is absorbed by the plant through the walls of the pitcher.

WILDLIFER NOTES

Musk Deer In Danger of Extinction

Every year 20,000 to 35,000 Himalayan Musk Deer are massacred. This is to meet the world demand for 200 kgs of musk used in medicines and cosmetics. In spite of a ban which was imposed by the government in 1972, wide spread hunting has greatly reduced the deer population which was once in abundance from Pakistan to Burma. This animal is soon facing extinction. The observation was made by Michael Green, who is working on the World Wildlife Fund's and the Indian government's 'Himalayan Musk Deer Project' in the Kedarnath sanctuary.

Musk, which is worth four times its weight in gold is secreted from a gland the adult male deer possesses. Hunters kill a number of female musk deer in the process of killing the males as the sex of the animal can only be noticed from about 30 metres.

The musk which is used in Ayurvedic and Unani medicines is said to be a cure for cardiac, circulatory and respiratory diseases. Japan imports 150 kgs of musk every year for use in medicines. She has, reportedly stocked enough musk to last seven years.

Conservation of Himalayan Deer will largely depend on controlling the musk trade which is worth 8 to 10 million dollars a year. Species found in China and Russia are under no threat as in both these countries the musk is extracted from captive animals.

Giant Panda In Need of Protection

The Giant Panda, symbol of the WWF, is in need of protection. At Wolong in China, top Chinese and WWF scientists like George Schaller are making an in depth study of the Panda's requirements for survival in the wild.

Needing large amounts of Chinese bamboo in their diet, 140 pandas were found to have died of starvation in the mid 70's when the bamboo was not that lush. And experts fear another drought could even cause the Panda's extinction. The Panda is shy and rarely seen, and estimates of their number are a meagre 400 to 1,000. China has set up 10 special reserves to protect the Panda.

Alipore (Calcutta) Zoo Hospital

The Alipore Zoo hospital will be modernized at a cost of Rs. 2 lakh. While the zoo hospital can test blood and stools of animals, new pathological equipment will enable examination of urine and tissues. The hospital has an operation theatre, segregation cages, quarantine wards and squeezing cages. The squeezing cage helps keep animals still when being injected. Post mortems of animals can also be conducted.

Animals suffer both from the diseases of humans, and those peculiar to animals. Larger animals must be treated in their cages, but others can be taken into the hospital The hospital is run by two doctors, a pathologist, two assistants, and two keepers.

Pet Tigress Shot Dead

Khairi the tigress, famed foster-child of Simlipal Project Tiger director Sarojraj Choudhary, was shot dead. This sad event (for previously she had shown much affinity to humans, even sleeping in the same bed with Mr. Choudhary) was necessitated by a probable case of rabies. After eating a rabid animal, Khairi showed signs of the disease herself and mauled some forest guards and attacked the deputy director, Mr. Naik, who was severely hurt. Khairi had been found as a cub by some tribals and presented to the forest department in 1974.

High-Altitude Zoo

The state Government of Uttar Pradesh has chalked out a scheme for a high-altitude zoo, where animals, which cannot bear the heat of the plains would be kept.

Rs 8 lakh was spent on this scheme last year and it was proposed to spend another Rs. 10.45 lakh on it this year.

Ungainly Armadillo Key to Elusive Leprosy

A dimunitive descendant of the ox-sized glyptodons of the Pleistocene period is today making a marked contribution towards control of leprosy. In the early 70's researchers in Louisiana found that *Mycobaterium leprae* could be multiplied in large quantities in the organs of this foot-long cold-blooded reptile. *Mycobaterium leprae* is the causative organism of the historically dreaded scourge of leprosy. Until the advent of the armadillo into leprosy research, all attempts to cultivate this disease-causing bacteria in the laboratory had failed. Though previously very difficult to do so, Armadillos are now being bred in

WILDLIFER NOTES

captivity, and tests of a killed vaccine on them have shown encouraging results.

World Environment Day

There was much talk and some action on June 5, 1981. What was said was important and needed to be dinned into the ears of the people. Hopefully now, armed with the knowledge gained, many will do their little bit for the cause, on which, finally, will depend the quality of life on this planet.

It was almost a decade ago that the United Nations designated June 5 as World Environment Day, to focus attention on the need to preserve and protect our eco-system. Complete success is today as far from realisation as it was then. But there is hope in the general raising of eco-conciousness.

The day was marked by functions organised at the Indian Environmental Society, the National History Museum and the National Council for Educational Research and Training. Dr M.G. Royston who spoke at the IES called nuclear energy crude, when compared to less dangerous forms of energy derived from bio-technology and solar energy. Other speakers included Dr S.Z. Qasim, Secretary of the Department of Environment, and Digvijay Singh, MP., Dr Qasim stressed the role of education in imbuing the young with good attitudes to environment, as is being done through eco-development camps, while Digvijai Singh spoke of the need to use political means to effect changes for the better in the environment.

The IES also released an information pack on trees and forests as well as held an exhibition of posters on the environment designed by children.

At the Natural History Museum Prof. C. Karunakaran spoke of ecological conciousness in the India of the Vedas and the Buddha, mentioning the latter's exhortation to mankind to nurture trees.

Dr. K.K. Mahajan speaking at NCERT spoke of the need for biosphere reserves especially to protect areas rich in plant genetic resources, from which high yielding varieties of crops were derived.

A more action oriented programme was chalked out by students of Jawaharlal Nehru University, who went to Chattarpur village to help the villagers make their environment more pleasant and humane. But their efforts were hindered by caste prejudices. For the sweepers of Chattarpur refused to clean its festering drains, and upper castes would not either. Result: both upper and lower castes live in a very low class, unhealthy neighbourhood.

Members of "Kalpavriksh" an environmental action group, submitted a memorandum to the Lieut. Governor on the sorry state of Delhi's drinking water supply due to the dumping of toxic wastes in the Jamuna.

The thoughts are not new. But then, we need deeds, not thoughts.

Tiger Census Every 5 Years

A tiger census will be held every five years. The next one is due in 1984. The steering committee of project Tiger will emphasise streamlining of the operation, according to Mr. B.R. Koppikar, the director. Till now the census has been rather haphazard. Unfortunately, the tiger population at the end of the century will only be 5,000 to 6,000, far short of the target of 40,000 set by the project. As ususal the major hindrance is increasing encroachment into forest land.

Japan Major Threat To Wildlife

At the close of the Convention on International Trade in Endangered Species, Japan was accussed of being a major threat to certain species of wild life. 15,000 blue whales used to be killed every year by the Japanese until they could not find any more, at which time they switched to hunting hump backs, soi and fin whales; 10,000 mink whales also fall to their harpoons yearly.

50,000 to 150,000 elephants are killed each year in Africa. And again, Japan is a major encourager of the ivory trade.

Rs 247 Lakh for Desert Park

Rs 247 lakh has been allocated for the establishment of a desert national park in the Thar Desert of Rajasthan. The 3,000 sq. k.m. park will fall in the districts of Jaisalmer and Barmer, which contain the rare Indian Bustard, the spiny tailed lizard, the Indian Toadagama, Chinkara, Blackbuck and Wolf. 13,200 hectares will be put under desert plants and 1,500 hectares under local grasses. This will help to preserve the fast vanishing flora and fauna of the Thar.

GAMES OTTERS PLAY

'If an Otter can't have fun doing something it simply won't do it'.

The otters are one of the most primitive land dwelling carnivores and fossil finds indicate that they lived in times as far back as the upper oligocene. Perhaps thirty million years ago. Today, they are found every where except in Australia and it is nearly impossible to categorise them. Of those that have been classified, it is difficult to chalk the limit of their range. The common otter of Europe has been seen from the Arctic Circle to north of the Himalayas and from there to the south of India—they are great travellers, especially the land otter, which travels as much 50 miles from its den in search of food, mate or a new house. Even the smooth otter, an aquatic animal found throughout India—in the Central provinces, Assam and adjoining areas—takes long treks on land and has been seen in the most unexpected of places. Constantly moving, they get no time to hibernate.

Even after reaching adulthood, the otters enjoy playing various games that they invent. The entire family joins in the games, building 'slides' on river banks and sliding down the mud into the water. A cautious young otter may at first hold its front feet out to slow its speed, but before long this caution is abandoned for a "what the hell" full speed approach. It then holds its legs flat against the body to get the full benefit of that wild uninhibited downhill trip. When swimming in a lake or stream it drops a pebble then chases it through the sparkling water, catching it before it touches bottom, only to bring it to the surface and drop it again. Underwater it balances rocks on its head or plays 'cat and mouse' games with its prey. Ed Park in his book on the otter said "If an otter can't have fun doing something it simply won't do it".

The common otter of India is small and grey in colour. Apart from the common otter, a species called the smooth otter is also found here. This species is trained and domesticated for fishing.

An otter's habits have been much publicised but certain aspects are not very well known. Although otters prefer to be in water they move on land too. An alarmed otter always heads for the water. The otter's pattern of attack, if unable to reach the safety of the water is to flop on its back and when the intruder comes closer, to bite and push with its fore paws. Rolling on its back in defence is related to the otter's habit of lyng on its back in the water. Their abilities include staying under water for long periods, coming up for air, protruding their nostrils and disappearing once again leaving behind them a stream of bubbles. Otters, like musk rats and diving ducks, have a type of insulation to protect themselves from cold. They tolerate icy water by preventing it from reaching the skin. The water is stopped by a bouyant blanket of air trapped amidst its fur. They frolic about in water at the lowest temperature. The otters wrap strands of ribbon -like plant around themselves while sleeping to prevent from drifting away from each other.

Family relationships are close, especially those between the mother and her pups. Otters breed at any time of the year. At two years of age, females begin having their annual litter and continue to do so for many years. The young are born in spring in the dark privacy of the burrow. They are already covered with thin fur but are blind and helpless for five or six weeks. The mother keeps the pups warm by snuggling next to them and on sensing danger even covers them with her head. The father is expelled from the family group during this early period. He returns later to join in the family games and to teach the young to fish. Although fully adopted to aquatic life, the young ones often need to be encouraged to enter water to take their first swim. The mother has to tempt them in by showing fish. Failing these gentle efforts she just grasps her pup by its back and drops it into the water.

Rivers otters feed on small fish, musk rats, cray fish, insects, frogs and small birds. The sea otter which can dive upto 300 feet, brings up shell-fish and cracks them while lying on its back. Occasionally it places a stone on its chest and smashes particularly thick shells on it. Another interesting aspect is that, they can use their flat tened snouts to pry apart any two moveable objects upto vast sizes and weights.

The otters like others of the carnivore family hold defended territories which are related in size to the abundance of food. The boundaries are patrolled regularly and they leave scent marks of urine and excreta. In the wild they are in the habit of leaving scent marks on a mound of earth, a twist of grass or a convenient rock, besides the trail. This is their form of communication as the other otters read these as signposts.

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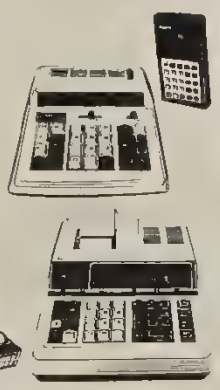

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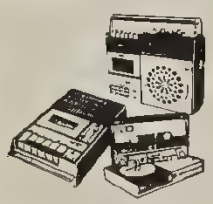

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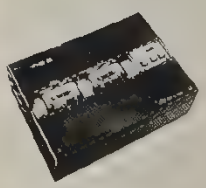

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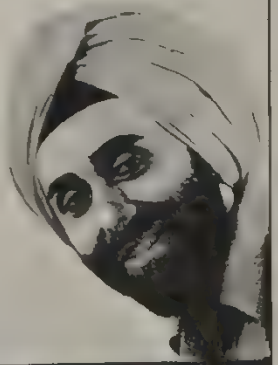

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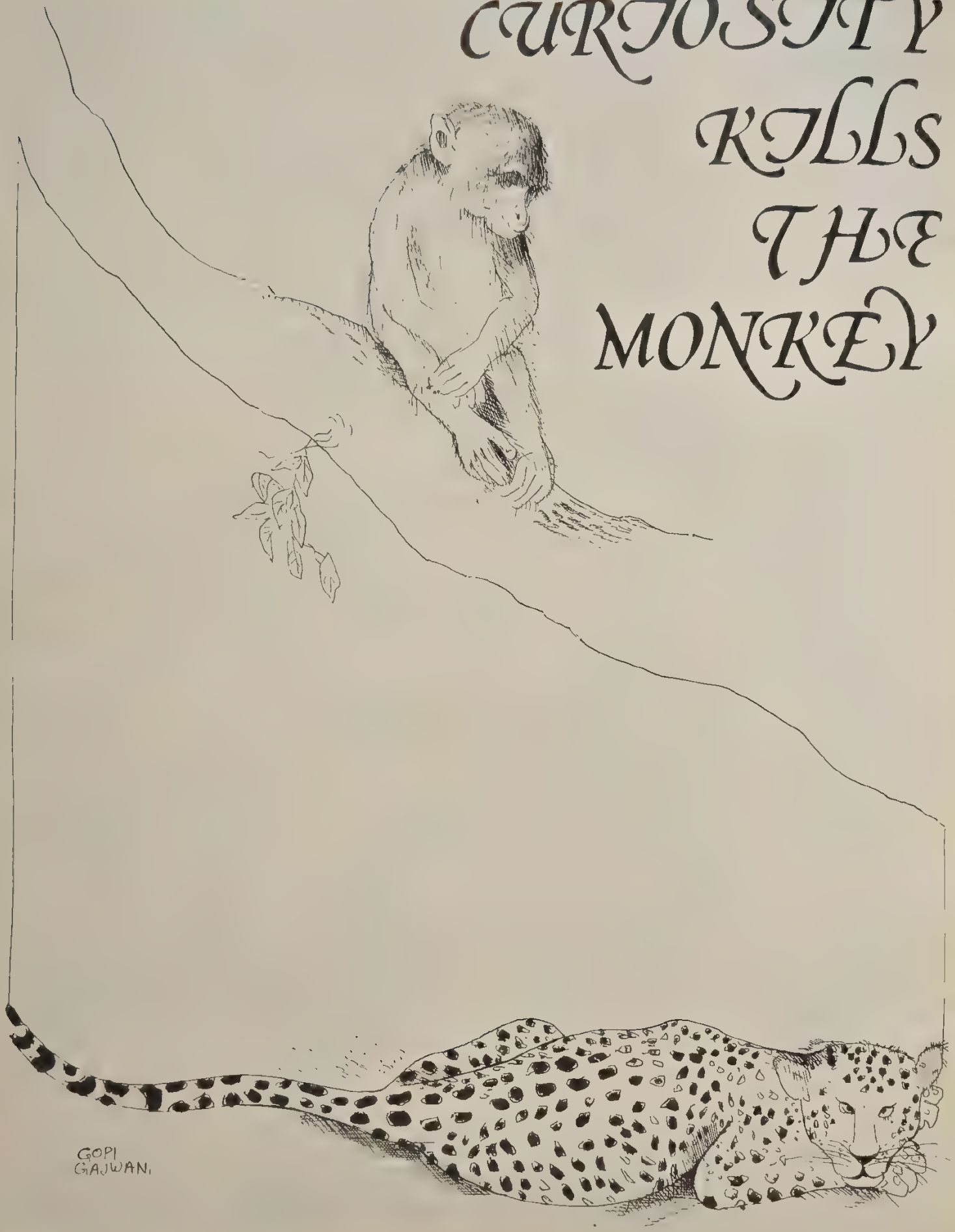
CURIOSITY KILLS THE MONKEY



F.W. Champion, *an officer of the Imperial Forest Services, worked and lived in India, in the 1930's. In his book* **Jungle In Sunlight and Shadow,** *he records his experiences in the 'mysterious' Indian Jungles. An extract.*

An incident showing how inquisitive tigers can be recently occurred in the foothills of the United Provinces. The story as related to me was as follows. A certain sportsman drove his car out into the jungle one afternoon with the intention of sitting up on a *machan* over a tiger-kill. When he had reached within a reasonable distance of his *machan*, he left his car on the roadside in charge of one orderly and went off to the kill. The tiger did not put in an appearance and on returning to his car, he was astonished to find the orderly left in charge had apparently disappeared. He called loudly but received no reply until he thought of looking inside the car where, to his amazement, he found the still-terrified orderly crouching down beneath the dash-board. On questioning the man it transpired that he was sitting quietly inside the car when to his terror, he saw a tiger walking towards him. He had no weapon of any sort so he crouched down inside the car, hoping that the tiger would pass on. But his hopes were not fulfilled. The tiger paused, gazing at the weird object which obstructed his road and then decided to come nearer to investigate. First, he walked around and sniffed at the various parts of the strange vehicle, apparently quiet unaware of the presence of the quaking orderly inside. Then, he put his fore-paws on the bonnet and looking in at the wind-screen, saw his own reflection in the glass. This gave him a shock and he started to growl at the reflection, quite unable to understand why his growls elicited no response, while the orderly, luckily for himself, remained hidden inside—comatose with fright. Finally, the tiger gave a snort of disgust and departed, much to the relief of the most unwilling but undetected spectator. This was the story as told by the orderly on his master's return, and from the clear pad marks on the sandy road around the car and on the dusty bonnet, it could not have been very far from the truth.

It is interesting to recall that the excellent old-time writer "Hawk-eye" once put forward the theory that one of the methods of hunting employed by tigers was to play upon the natural curiosity of the deer which form their chief prey. This suggestion was that the tiger would lie in such a way that a portion of his strikingly coloured skin would catch the eye of the deer. They would watch it for sometime and then finding it did not move, they would gradually approach nearer to investigate until finally the tiger, being now within striking distance, would hurl himself upon the helpless deer which he had thus lured to their destruction. The idea is attractive and just within the bounds of possibility; but unfortunately, deer posses a sharp sense of smell so that the tiger would have to apply a good deal of deodorant if he wished to remove his own strong natural effluvium.

Even so, experienced human fowlers and trappers certainly manage to take animals and birds by taking advantage of the trait of curiosity displayed by creatures.

"Hawk-eye's" suggestion of tigers catching deer by playing on their curiosity receives considerable confirmation in the following story related to W. Horst of the Indian Service of Engineers by a Nepalese Tharu named Ramji. This story refers to leopards catching monkeys, and I will give it in the man's words, translated into English

"Yes, Sahib, panthers are very bold and very cunning. Have you ever seen one catch a monkey? No. Well, I will tell you what four or five men of my village and I saw in the patch of jungle you beat through yesterday.

We had been ploughing since dawn and sat down to rest under the long mango tree. There were some brown monkeys feeding quietly in the trees nearby and suddenly one of them gave the usual sharp alarm call. We then heard the grunt of a charging panther, and saw a big one rush half way up one of the smaller trees and then down again as the monkeys left for the safety of the large *jamun*. He then charged over to the foot of the *Jamun* and scratched up the grass and leaves round its roots. The excitement among the monkeys was now tremendous and they leapt about the branches in an agitated way which was just what the panther expected and wanted. Had a monkey lost his hold or had a branch broken under one of them, the panther would have had his meal. But, his luck was out and in a short time one saw him stretch himself on the ground a few feet away from the tree and apparently go to sleep. The monkeys soon quieted down and we could see them looking down at the panther with the greatest interest. After a while, one of the bigger ones inched right over and began to drop leaves and twigs on to him; but still there was no sign of movement. The other monkeys then began collecting closer around him, and it was obvious that they couldn't understand what happened. One of them climbed down a tree a short distance a-way and took a few steps towards the panther, but his nerve failed him and he dashed back to safety. There was still no movement from the panther, however, and soon three or four monkeys were on the ground taking good care to keep well out of reach of claws and teeth. This continued for nearly half-an-hour, the monkeys drawing nearer, until at last, one, bolder than the rest, actually touched the panther with his hand. This was what the panther had been waiting for, he struck immediately and seizing the inquistive monkey, he quietly carried his victim away to the patch of thick thorn out of which the pig broke yesterday. That, sahib, shows the cunning and patience of a panther when he is hungry and how the inquistiveness of monkeys can lead them to their distruction.

Although, I have never myself had the good fortune to see such a trick carried out, the story to my mind rings absolutely true. The Tharu are an illiterate, simple race of jungle people, naturally truthful and straight-dealing.

SUICIDE AT HAFLONG

Jatinga village, in the Haflong district of Assam is of remarkable interest to birdwatchers all over the globe. For it is here that every October hundreds of birds of many species crash into the round lamps set up by the villagers. The obviously disoriented birds are then easily killed for the pot, or kept to be sold. As yet, no sure explanation exists for this bizarre phenomenon.

The 'bird mystery of Haflong' was first brought to the notice of the outside world with the publication of E.P. Gee's *Wildlife of India*, in 1964. Mr Gee had visited the area in the company of the famed ornithologist Salim Ali in 1961, and though at that time they were unable to witness this avian spectacle, Gee was convinced enough to mention it in his book. The many feathers lying in the area told of the slaughter that had taken place.

Having received news from Haflong that the birds had started coming, a group of us, led by Dr. G. Michael of the Life Sciences Department of the North-Eastern Hill University, set out. On reaching Haflong, and as we alighted from our jeep, a man came to us and said; "it fell yesterday", meanwhile holding out his hand. In it was a Hooded Pitta, a tiny bird of brilliant colours with a snuff-coloured hood. The man was from Jatinga, three kms away, and we proceeded towards it.

It is a tiny village, perched atop a ridge 3500 feet high, overlooking a deep, densely wooded valley. Earlier this century it had been inhabited by Nagas seeking refuge from the attacks of rival tribes. One winter night they were inundated by birds which even flew into their houses. The superstitious Nagas were quite amazed by the persistence of the birds which kept coming and soon abandoned the village to the 'evil spirits'.

The site, however, was good, and in 1905 it was bought by a Jaintia (tribal) chief and settled by 100 Jaintia families. The birds continued to appear and it was then discovered that it was light that attracted them. By 1926, trapping the birds with the aid of lights

became a community affair, and thou sands were killed

Our group waited till the moon slid behind the mountains and then set out for Jatinga. On reaching, we saw four petromax lamps at four dif ferent points. Half of each lamp was covered with cardboard and the beam directed over the valley. We took posi tion behind one lamp at 11.30 along with a group of young Jaintia men. One of them had a long flexible pole, which he would use cruelly to bring the birds down. One boy was telling us about a big, blue bird they had got the previous night. It was probably a pur ple moorhen

A fog swept across the area and the play of light on it created a ghostly effect. A wind wafted from the south. Suddenly, out of the fog, a bird shot out and fell at our side. It was a white-breasted water hen.

Two more birds flew straight into the verandah we were sitting on and dashed against the wall, to fall down stunned. They were Indian water rails, birds rarely seen. Other birds flew across the beam, to be brought down mercilessly, whipped down by the bamboo poles

Midnight passed, and time was punctuated by the swishing of the whip-poles. By now, we had 11 spe cies. A slight drizzle began and we could hear the distant calls of some kind of duck. Soon the dark around us was reverberating with these calls. Two lesser whistling teals crashed into the thicket nearby and were collected. Their calls had been somewhat differ ent from the low whistle they utter while in flight.

When we left at dawn, we had col lected 16 species for identification and preservation, including the tiny three toed kingfisher and the wedge-tailed green pigeon.

Certain conditions must be satisfied before the birds come. It has to be dark, with no moon visible. There should be fog, or even a slight drizzle, and the wind must flow from south to north. And there must be the lights.

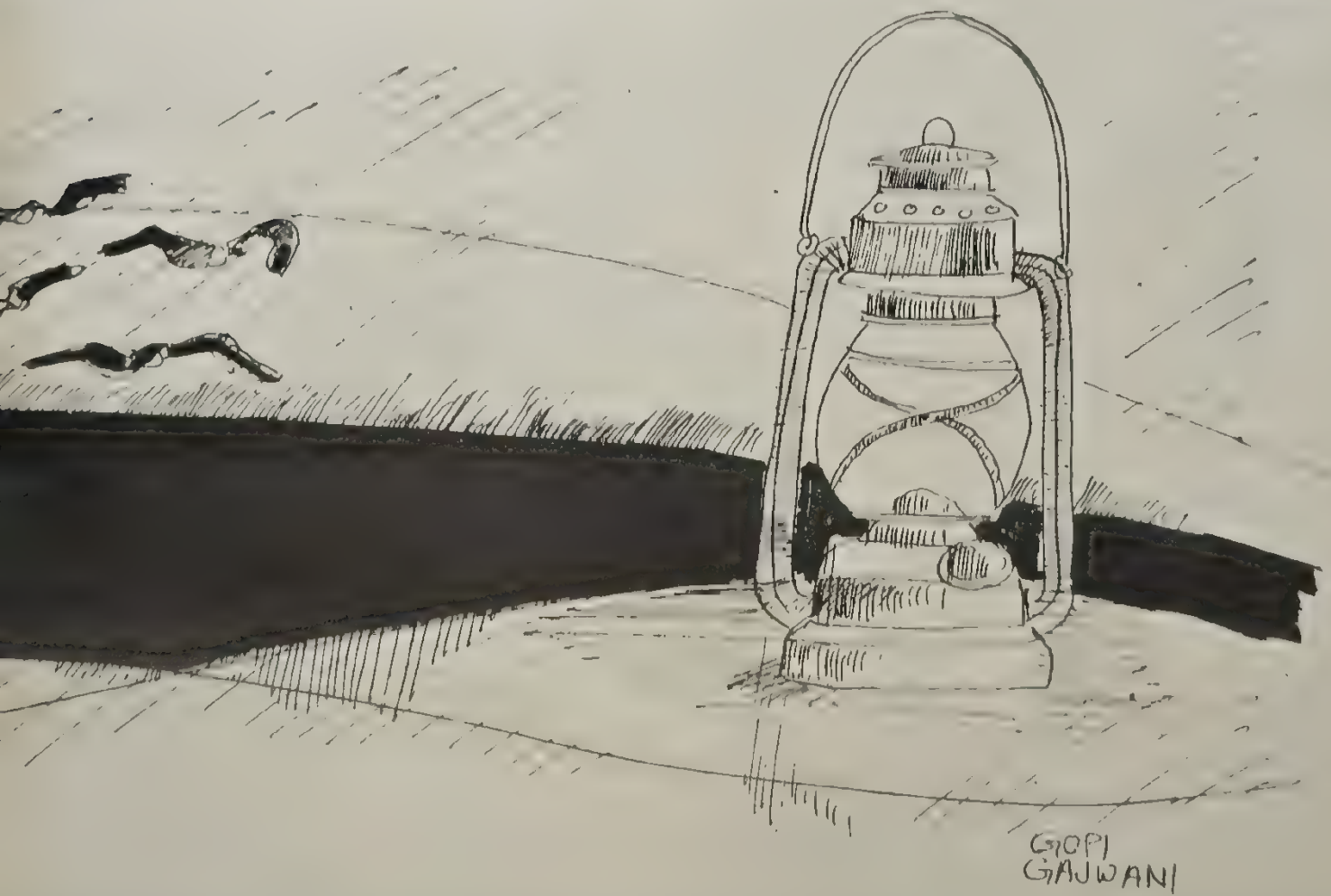
The birds come in from the north, and that had given rise to the specula tion that they are on a migratory route, especially as this event occurs between the middle of August and the end of October. But Salim Ali had dis covered that all the birds are local, so interception of migratory patterns is not the answer.

Another interesting fact is that almost all the birds involved are diur nal. Rarely do birds of prey fall, nor do any of the common town birds; crows, mynahs or sparrows.

M Krishnan, of Madras, had an interesting explanation. Perhaps the simulation of dawn by the lights and foggy conditions disoriented the birds. This is quite possible as similar pheno mena have been observed around lighthouses in northern England, as well as from ships. Last year from Lun glei, in Mizoram, came news of birds falling around lamps.

Research into possible explanation goes on. Meanwhile, the slaughter continues.

—S T BASKARAN



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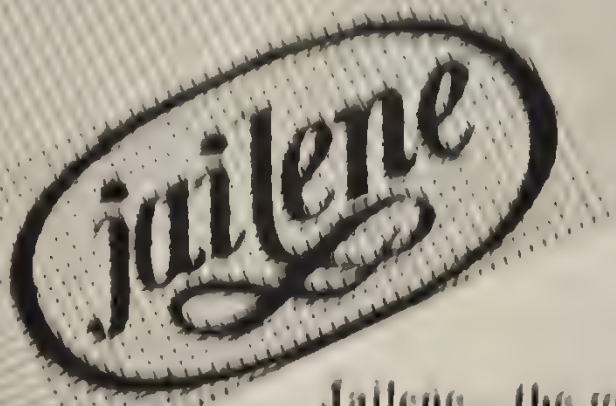

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Tigep! Tigep!

Tiger! Tiger!

TEXT & PHOTOGRAPHS: TOBY NEIL SINCLAIR

Bandavgarh, a relatively unknown but well established national park in north eastern Madhya Pradesh, is perhaps the only place in the country where one can still see as many as seven tigers in a single day.

Originally a part of the princely state of Rewa, the forests around Bandavgarh were protected for shoots; the only reason why they exist even today. The park is situated in the undulating Vindhya ranges that stretch diagonally across central India. The forest land surrounding the 32 hills in the park consists mainly of dense tropical deciduous plants. *Sal* (shorea robusta) is predominant with a sprinkling of *Khair Dheora* and *Tinsa*. The Sal forest covers 57 per cent of the park with a mixed forest of *Salai, Saju* and *Dhobin* covering the upper slopes of the hills. The valleys vary from large soft and marshy grasslands to steep-sided streams with sandy beds. The entire area falls within the catchment area of the river Son, but only the two *nullahs*, the Charanganga and the Admnar, along with a few stray pools retain water throughout the year.

Before I visited the park for the first time, I had heard a variety of reports including an account by Dr. Charles McDougal—author of the *Face Of The Tiger*—who saw seven tigers at Bandavgarh in a single day. Inspite of the fact that the Kanha National Park is considered the best place in India to see tigers, Bandavgarh is now increasingly mentioned for its large and easily accessible tiger population. My first visit to Bandavgarh was in late August, but with the help of the forest department, which lent us a jeep, we were able to cross the Charanganga Nala at the Northern entrance of the park to make our way past some domestic cattle, which were grazing within the

A temple ruin in the Bandavgarh fort.

A 46 feet long tortoise made of stone at Bandavgarh.

The reclining Vishnu: source of the Charanganga.

protected area.

The park was wonderfully lush with a variety of greens growing richly in the humid air. The jungle was never quiet as numerous insects buzzed around. During this first visit we did not see too much game; only a few cheetal and hog deer, some chinkara, sambar and nilgai. In the evening grey hornbills flew overhead as we sat outside the lodge we were staying in.

One of the highlights of this first trip was a visit to a spectacular fort that occupies the central hill within the park. This hill rises to an altitude of 2,660 feet with the central plateau covering an area of about 580 acres, the sides of which drop vertically by as much as 1,500 feet. With only one possible approach, the plateau is impregnable and dominates the surrounding area. Legends recount that the fort was built by Nal and Neel (the monkey architects who also built the Adam bridge between India and Sri Lanka) for Rama to spend the night on his return from Lanka. Rama, it is believed, later gave the fort to his brother, Lakshmana, who, as lord of the fort, was known as Bandhava-Dhish. The name Bandavgarh or 'brother's fort' has been derived from this title.

In 1494, Sikandar Lodi the ruler of Delhi sent an army to attack the fort but defeat was somehow averted. A few years later, during the reign of Vir Bhano Singh the poet-saint Kabir took up residence in the fort for a short time. The mughal emperor Humayun while being pursued by the Lodhi king Sher Shah sent his *begum* (wife) to Bandavgarh and soon after moving out of the Bandavgarh fort she gave birth to Akbar, the greatest of the Mughals, at Mukundpur.

Some of the old grandeur is retained even today. Among the overgrown tanks are some very fine buildings. There are civil buildings as well as some well preserved temples and a series of stone sculptures of the incarnations of Vishnu which include a tortoise 46 feet long. At the base of the fort is a reclining sculpture of the God with a natural spring at its feet. This spring feeds the Charanganga nala.

Among the ruins now live groups of sambar and some blackbuck. In one of the 14 surviving tanks in the fort, I very briefly saw a python swim across regrettably not long enough to photograph it.

On other occasions, I was able to see much more game.... within a three day period I was able to record about 126 bird species and a variety of mammals including sloth bear, chowsingha, sambar, cheetal, barking deer, wild boar, chinkara and a few jungle cats, apart from the occasional tigers.

At 7.15 on one January morning I went out on elephant back with K.K. Singh who manages the deluxe Jungle Camp nearby and came across a tiger kill being cleaned up by a white backed vulture, two Egyptian vultures and numerous jungle crows. Ten minutes later we came across three young tigers resting in the early morning sun. One of them, a young tigress was lying in the open near the kill while two other males watched our elephant with interest. These three sub-adult tigers were slightly over two years old and had left their mother after she had re-mated, and were now fending for themselves.

One of the male tigers in the group disliked being disturbed and quickly moved off through the bamboo thicket. The other male who was constantly alert to our movements also rose and walked away after a short while. The female, however, chose to remain, and we watched her for 45 minutes before we left her to digest her breakfast.

Later that day we met Mr. Sharma, the director of the park, and he informed us that steps were being taken to triple the size of this highly vulnerable and disturbed refuge

Unlike the Kanha National Park, Bandavgarh has received little attention from either the state or the central government, or from individuals concerned with the plight of India's natural environment. The gazetted area of the park is only 105 square kilometres and unless better protection is given to the surrounding forests and the area given a sanctuary status, it will soon become an "Island in a sea of cultivation." Along the northern boundary of the park cultivation has already reached as close as five metres from the boundary. With cultivation comes cattle, and with the cattle a host of dreaded animal diseases. The cattle graze in the park and reduce the food supply of the herbivorous species resulting in a loss of their numbers. This results in lack of food for the carnivores who are then forced to feed on the domesticated cattle. It is time now to take steps against illegal cultivation and grazing if we are to save this beautiful park from extinction.

With its combination of natural beauty and historical monuments, Bandavgarh could be very attractive to visitors. And with judicious management, funds could be earned with which to protect this spot from encroachments. If the government would do its bit, there is no reason why Bandavgarh National Park cannot occupy a prominent place among India's Wild attractions.

During a three or four day stay at Bandavgarh a visitor can expect to see a large number of species.

Visitors can stay at the Forest Department **Rest House** in the adjoining village of Tala or at the state government run **White Tiger Lodge**. The most expensive is the **Bandavgarh Jungle Camp,** set around the Maharajas hunting lodge. The Jungle camp also holds the keys to the fort.

The nearest airfields are at **Khajuraho** and **Jabalpur** but the most convenient way of getting to Bandavgarh is by train to **Satna** which has a regular service from Delhi, Allahabad and Varanasi. From Satna, Bandavgarh is a three hour drive ..... slightly longer by bus. The jungle camp can organise cars from Satna or Khajuraho and has jeeps available for travel in the park.

For further information contact: Travel Services, Indian Wildlifer, A 007, Pragati Vihar, New Delhi.

Where the Ass is king

TEXT: RAMESH BEDI PHOTOGRAPHS: RAJESH BEDI

The Little Rann of Kutch is an inhospitable waste. But Equus Hemionus Khur, the Indian Wild Ass thrives here.

In January, 1975 our group was fortunate to be invited to join in the capture of a foal for the Junagadh zoo. After locating a herd of 30 animals grazing on the scrub adjoining the salt waste of the Rann, we chased them in a jeep. Five horsemen had earlier been positioned to cut off the animals if they attempted to escape deeper into the Rann. We then accelerated up to 70 kilometres per hour to keep pace with the galloping herd.

Besides a large male, darker in colour and some females, there were four foals. All had been enjoying the winter sun and rolling in the sand.

We picked on the youngest foal in the group, and for forty minutes we chased him at 40 miles an hour. The courage and stamina of this young fellow was remarkable, and in spite of his exhaustion he did not give up. His pace declined; first to 20 and then 10 kilometres per hour. But he kept going.

Touched by his courage, we stopped our jeep to allow him to escape. But the chase had a sorry ending. The foal, dehydrated and exhausted, collapsed and soon died. His death shook all of us, and we spent many sleepless nights thereafter.

The Little Rann of Kutch is also known as the Rann of Dhrangadhra, and in the course of our expeditions we met Sidha Bappa, the young prince of the former Dhrangadhra State. He was better acquainted with the habits and habitat of the wild ass than any of us and was always of great help. His lineage was well respected by the local people, and the hospitable prince even accommodated us in his palace.

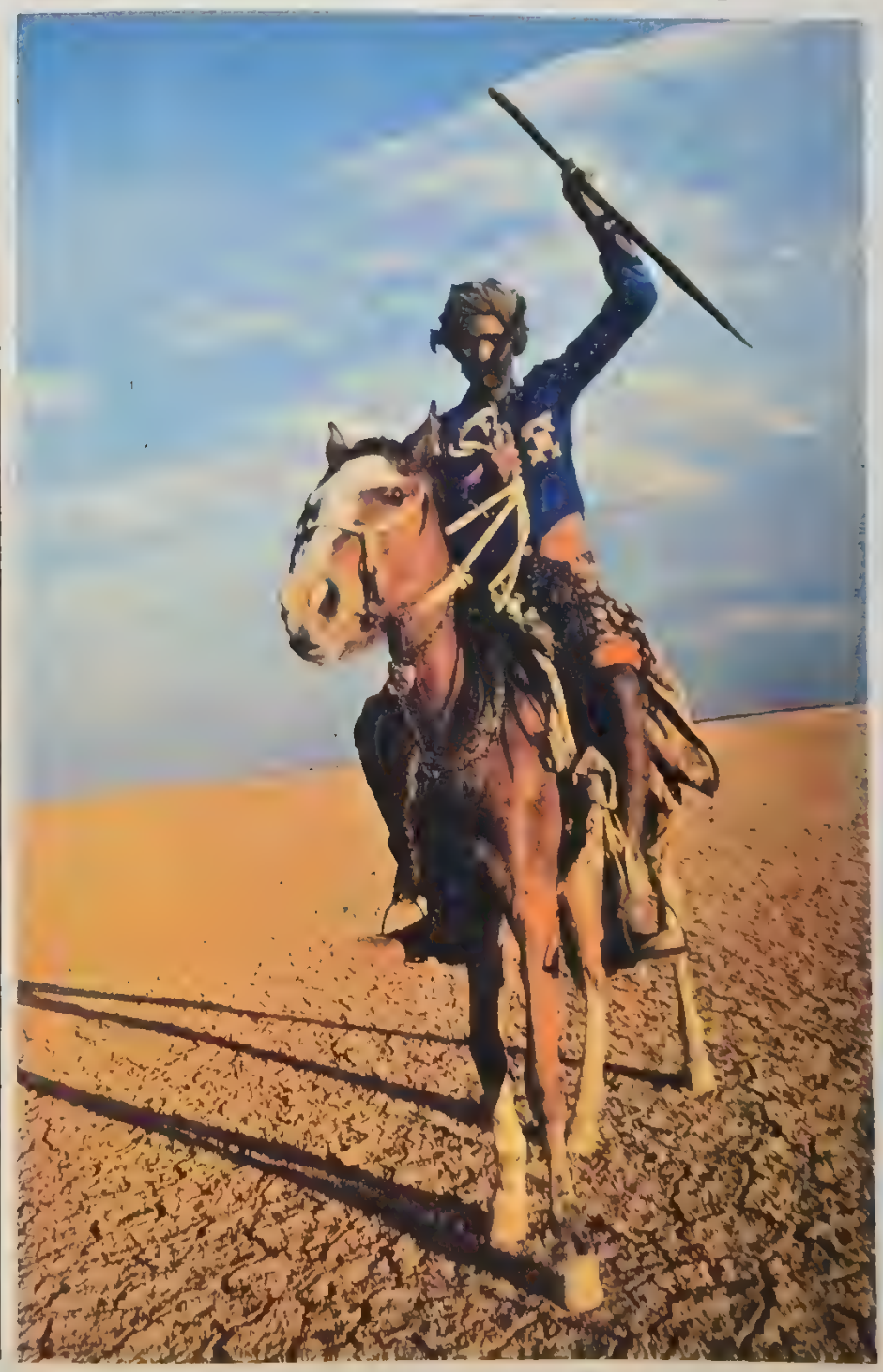
Catching the fast footed wild ass had been a sport of Dhrangadhra's royalty for a long time. Chasing the animal in a jeep, they would trap it with a noose around its neck and then release it after belling it. This bell acted as a warning to farmers who could prevent the ass' incursions into their fields on hearing the bells.

The local people who live near the Rann are mostly vegetarians. Vaishnavites, they are basically cultivators who rear sheep in the lean months. They are also animal lovers and do not harass the fauna. Instead they feed them and encourage them to visit their villages, which we saw were full of domesticated wild peacocks.

The wild ass is known as the *ghor khad*. The sanskrit name is *gaura khara*, or white ass. Actually the wild ass is a light-yellowish brown in summer, but darker in winter. Its underparts, muzzle and legs are white. It is also much larger than the domestic ass, standing 40 inches in height. The handsome beast's sandy coat blends into the background of desert it roams, with its chestnut mane flowing in the wind as it lopes along.

Originally, the Asiatic Wild Ass ranged over parts of Arabia, Turkey, Southern Russia, Tibet and Mongolia. But now they are restricted to a few areas, the more prominent being in the Rann. It lives in groups of about 15, which during the seasonal migration

A Defair poacher: they sell ass meat in the neighbouring towns.



A herd of wild asses at the Rann. (Bottom left) The salt pans that are destroying the natura

may join to form large herds. There is no set breeding time, though foals are generally born in the summer. What they do during the monsoon flooding is uncertain, though it is believed they retire to raised islands, *bets*, that dot the flooded plain.

During the day, the wild asses feed on the shrubs at the periphery of the Rann, but at night they often enter cultivated fields for a quick snack. The farmers are quite wary when driving away the animals as they have a nasty bite and a kick capable of denting even a sturdy jeep. Nonetheless, quite a few asses die from eating crops sprayed with pesticides.

Though he does not have any natu ral foe, the wild ass must be wary of man. One day, we saw a *defali* (poacher) with a long muzzle-loading gun galloping on the Rann. Sidha Bappa chased him and after a long

habitat of the asses. A domesticated wild ass seeks parental affection from its owners horse.

drive eventually caught him. He was released on the promise that he would not shoot any more of the asses. But that was an unsure promise indeed. Many are the tales of the cruelty and cunning of this tribe of *defairs*, who kill the wild ass and sell its meat as blue bull meat. Others kill just for sport as neither its skin nor its flesh is of much value.

Although on the endangered species list since 1952, and in spite of a 5,000 sq. km. area of the Rann being declared a sanctuary for the wild ass, more needs to be done. Either the salt panners (who cut the already sparse shrubs for fuel) or the wild ass, must go. And for the sake of the future, we hope it will be the panners. The wild ass remains, but is in danger, with only a small group of Vaishnavite villagers to protect it. □

ELEPHANT in Mughal Painting

TEXT & PHOTOGRAPHS: GEETI SEN

From ancient times in India the strength of an army was measured in terms of its war elephants. The virtues of the elephant were extolled in literature as well as in stone carvings, and its form and character inspired the popular imagination, so that it appears in Buddhist legends of the *Jatakas*. The earliest representation of it is carved out of the living rock at Dhaulagiri and dates to third century B.C., as a regenerative symbol of Buddhism. Subsequently it appears in the wall paintings of Ajanta, in lively expressions of forest life at Sanchi, and again in temple reliefs at Ellora.

Yet curiously perhaps the most sympathetic treatment of the animal, at least in colour, was created by the Mughal studio of painters. This was due in no small measure to the patrons of art; to the Mughal passion for outdoor life and the hunt; and finally, to their detailed study of animals which is paralleled by contemporary writings of the Mughal age.

Babur, the first of the Mughals to invade India, won the Battle of Panipat and the throne to the empire in 1526 A.D. He wrote his memories of Hindustan rather in the form of a guidebook, one section of the work describing the climate and the rivers, the fauna and flora of the country. This book is today a classic, with every passage on the rhino, the black buck, the monkey and the crow written with distilling clarity. He begins his studies with a paragraph on the elephant, as the foremost of Indian animals. He

appreciates its properties, its actual value and usage in India in the 16th century.

"The elephant is an immense animal, and very sagacious. If people speak to it, it understands. If they command anything from it, it does it. Its value is according to its size; it is sold by measure.... It eats and drinks with its trunk, if it loses the trunk it cannot live. It has two great teeth (tusks) in its upper jaw, one on each side of its trunk. By setting these against walls and trees it brings them down; with these it fights and does whatever hard tasks fall to it. People call these ivory; they are highly valued.. (The elephant) is much relied on by Hindustanis, accompanying their armies. It has some useful qualities—it crosses great rivers with ease...."

Babur was the ultimate naturalist. The details which he records with that remarkable quality of realism find expression in the paintings conceived in the reign of his grandson, Akbar. The distinctive roles of the elephant which he notes come alive in vibrant colours, in incidents of siege and warfare, of an entire battalion of elephants forging the raging waters of the river, of elephants being incited to war by the sheer smell of gunpowder and the sound of drums,...

These pictures appear as the illustrations to the historical and official chronicle of Akbar's reign, the AKBAR NAMA. Written by the king's most trusted friend, chronicler and statesman, Abu'l Fazl, the incidents pertaining to elephants are numerous. It is abundantly clear that Akbar chose to be "native" in his preference for elephants, as the most favoured and highly prized among animals. Frequent episodes refer to Akbar's involvement with elephants: the trapping of wild ones, the taming of *musth* or rutting elephants, the witnessing of elephants in combat, of elephants as booty, of elephants at war, and finally of elephants as executioners.

Quite often these passages bear marvellous descriptions of the speed and fury of elephants. Abu'l Fazal compares their voluminous forms to

mountains, their vengeful spirit to monsoon clouds, suggesting that he too, has been inspired by traditional Hindu lore on elephants. Consider for example, the following passage:

"He gave special attention to elephants, which are wonderful animals in form and in ways. If in respect of size I liken them to a mountain, in order to describe them to those who have not seen them, I do not succeed in my attempt, for where is account taken of their beauty of form and where is their swiftness? Or if I liken their speed and fury to the wind, how is their wrath depicted at the time of their overthrowing the firmfooted on the field of battle?... A separate volume would be required to describe their ferocity, their revenge and their wondrous deeds."

An incident occurred when Akbar was merely nineteen years of age, which demonstrates his fearless attitude to elephants. Having mounted a mighty and *musth* elephant called Hawai, he pitted him in combat against another royal elephant on the polo field. Hawai chased Ram Bagha across the bridge of pontoons in Agra, and across to the further banks of the turbulent Jamuna river. With the weight of these two huge elephants the bridge of boats almost collapsed.... The Vazir bared his head and lamented, and prayed to the king to desist from such wild abandon, and royal servants threw themselves in the raging waters in a bid to save their young master.... Akbar however, sat firmly with his bare feet tucked around the heavy ropes that bound the elephant and continued on his adventure, confessing later to his chronicler that this seemed to him to be an excellent means by which to test his Maker and his own destiny. The entire episode is related in a splendid double-page painting, with the two "mountain forms" moving darkly and swiftly across the precarious bridge, with the pontoons rising up and down, and the servants chasing after the emperor.

Another series of episodes is recounted of the year 1564 A.D., which led to the trapping of wild elephants in the forests of Malwa. The season of this expedition being that of the monsoons, Abu'l Fazl uses a rich metaphorical introduction to the event, comparing the elephants to the dark clouds of the monsoons. The passage gives a lucid account of the manner of trapping and taming elephants, employed at the time of Akbar

"The order was also issued that whenever wild elephants were found, the tame elephants should follow them up, until the latter from weariness lost power of movement. Then from each side of these wild elephants the drivers who were seated on the tame elephants should cast one end of the rope around the neck of the wild one., In this manner they were to bring him into captivity, and to drag him along. Everyday they were to tame more and more, and to throw fodder before him until at length they could mount on him... The real method of taming every wild animal is gentleness, and the exhibition of what is agreeable to him, such as grass, grain and water."

Soon after this event a herd of seventy wild elephants were reported by the Bhil tribes, to be moving through the forests. Among them was one wild tusker, "remarkable for the beauty of his movement". The emperor set his target on the capture of this prize animal, and the narration moves several pages, and several days engaged in its capture. Akbar ordered that a war elephant should be brought forth from among the rank of special or *khasa* elephants, to fight with him. A great contest took place between the wild elephant, and Bhirun the royal elephant. The whole herd of elephants was captured, and entered the enclosed limits of a fort. Once again a combat was arranged between the elephants.

"These two moving mountains had a great fight and contested together for one watch of the day. Khandi Rai nearly broke the pride of the wild elephant, but on a sign from His Majesty to the attendants, Khandi Rai was withdrawn. The wild elephant by blows broke the stone wall (of the fort) and went off into the wilds... An order was given that the elephant Rai Bhirun who was a powerful animal and distinguished among the special elephants should be brought and made to head the elephants aforesaid. Again these two mountain forms contended together. As the wild elephant had fought a great deal he was nearly overcome. drivers brought him to the foot of a large tree, and bound him with strong ropes. Slowly he grew tame, and was gradually included among the special elephants. He received the name of Gajapati...."

A double page composition introduces the preliminary combat which precedes the taming of the wild tusker, as well as the moments after his capture. A clearing away from the jungles becomes the scene of the encounter. Below a large tree, and bound securely to it with ropes, is the prize booty of the wild tusker. In scale he is as large as the tree itself. His condition of being

Miniatures from the Akbar Nama
portraying the manifold functions of elephants

Miniatures from the Akbar Nama
portraying the manifold functions of elephants
in the Mughal empire

musth is conveyed by the way he greets his royal visitors. He raises his right foot impatiently to paw the air, his ears flap backwards, and his trunk curls up in anger. A swelling between the small angry eyes would seem to define his fierce and demoniac nature. A pair of finely pointed tusks qualify him again as a highly valued animal, deserving of the title given to him: Gajapati, king of elephants.

The royal elephants which are being led away in single file in the foreground have been used to help in the capture. That they are domesticated is proved by the apparatus used in the harness of elephants. Their large bulk is criss crossed with ropes or *dor* that pass from the tail to the throat. The white ivory trusks are decorated with *ban gris*, a collection of rings made of iron or brass, used to strengthen as well as to ornament the trusks. A piece of canvas or red velvet, called the *andhi-vari*, is placed above the elephant's eyes, and over them if he proves difficult. The *mahouts* who ride them also carry an *ankus* or a small crook, "used for guiding the elephant and stopping him."

Both in times of war and of peace elephants were prize booty. It was customary for the Raja of a kingdom or for a chieftain of a fort to offer elephants to the ruling Mughals, in the way of tribute. An illustration from the Akbar Nama forms a series of five paintings on the celebrated siege of Rathambhor fort in Rajasthan. The fourth painting presents Raja Surjan Hada of Rathambhor brought to capitulate before Akbar, and to submit the keys of the fort. Among the gifts which he offers in the way of tribute are covered trays, horses from Arabia and an elephant appearing in file outside the gorgeous red awnings of the Mughal encampment... Again, the rebel brothers Ali Quli and Bahadur Khan decided to accept Akbar's sovereignty in 1561 and

"Proceeded to do homage. They are exalted by doing so and presented the varieties of the country by way of pershkash. They tendered noted elephants such as Dilsankar, Putta Dalil, Sab Dilia and Jag Mohan, every-one of which was a heaven in his world, and they with shame and repentance made the dust of the threshold the collyrium of their eyes."

Abu'l Fazl tells us that the price of an elephant varied from one lakh to one hundred rupees, but that elephants "worth 5000 to 10,000 rupees were pretty common. At war, they were considered the greatest assets of the Mughal army. The official chronicler enumerates their qualities in the *A'in i Akbari*, saying;

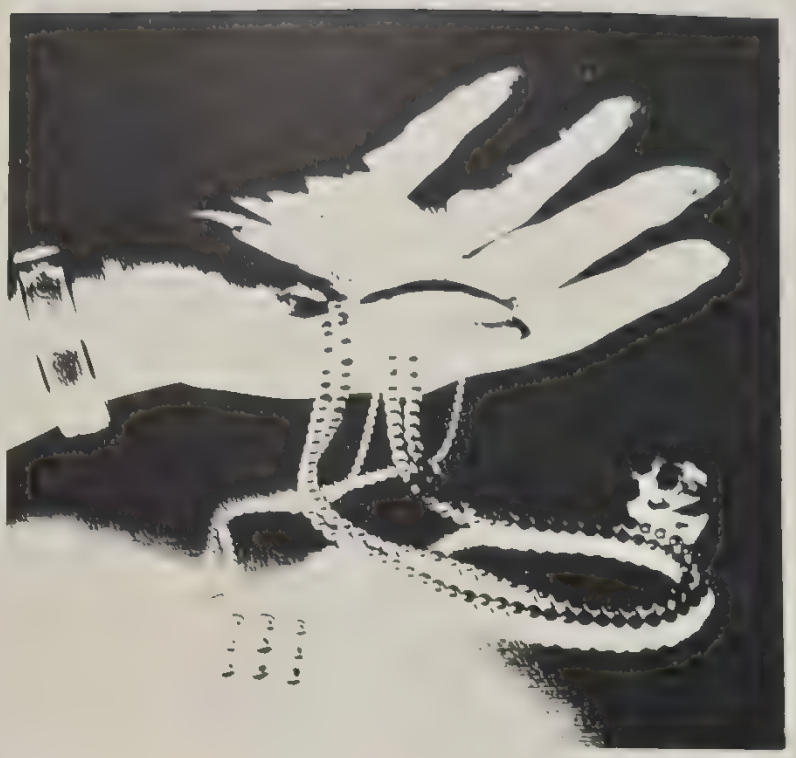
"This wonderful animal is in bulk and strength like a mountain, and in ferocity like a lion. It adds materially to the pomp of a king and to the success of a conqueror, and is of the greatest use for the army. Experienced men of Hindustan put the value of a good elephant to 500 horse; and they believe that, when guided by a few bold men armed with matchlocks, such an elephant is worth double that number."

The prolonged campaign against the Afghan rebels Ali Quli and Bahadur Khan took three years to bring final victory to the Mughals. The account of events shows that the royal elephants played a significant role in bringing about victory, and in cowing down the pride of the enemy ranks. The imperial army marched from Agra to Jaunpur, flanked by two wings. It crossed the Ganges river, all magnificently astride the royal elephants. By means of their grand approach they were able to lower the confidence of their opposition. Three magnificent paintings present the fording of the river, led by the emperor himself.

The elephants at war were dressed with armour and accessory details of war trappings. They were trained to react to the sound and smell of war fare. As noted by the biographer, "the very noise of battle makes some superior elephants just as fierce as in the rutting season. Thus His majesty's elephant Gajnukta; he gets brisk as soon as he hears the sound of the imperial drum.." The buttressing of armour is described by a visiting Jesuit priest at the court, Father Monserrate:

"The war elephants have their forehead covered with plates of metal, others with rhino hide, others with cotton down, and their conductors have side arms and breast plates or cuirasses and coats of mail, and they have with them some companions with bows and arrows and muskets. The elephants go in the rear, and when there is danger a body of them is detached... They are never placed in the van, because they prevent seeing the enemy, and when they are wounded they turn upon their own people and throw them into disorder and trample them to death."

Yet these authors admit their limitations in being unable to describe the swiftness and ferocity of avenging elephants on the battlefield. Such limitations were less felt by the painters, who were able to express, through colour and rhythm, the sound and the fury of battle. This is most effectively conveyed in a magnificent painting where two war elephants Udiya and Chitranand collide, presenting a melee of sound, colour and movement. The painting is by Kesu, a master artist who merits attention among the seventeen painters named in the *Ain-i-Akbari*. □



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